

FIGURE 1 - General Overview of Distributed File Storage System

communication with other server nodes

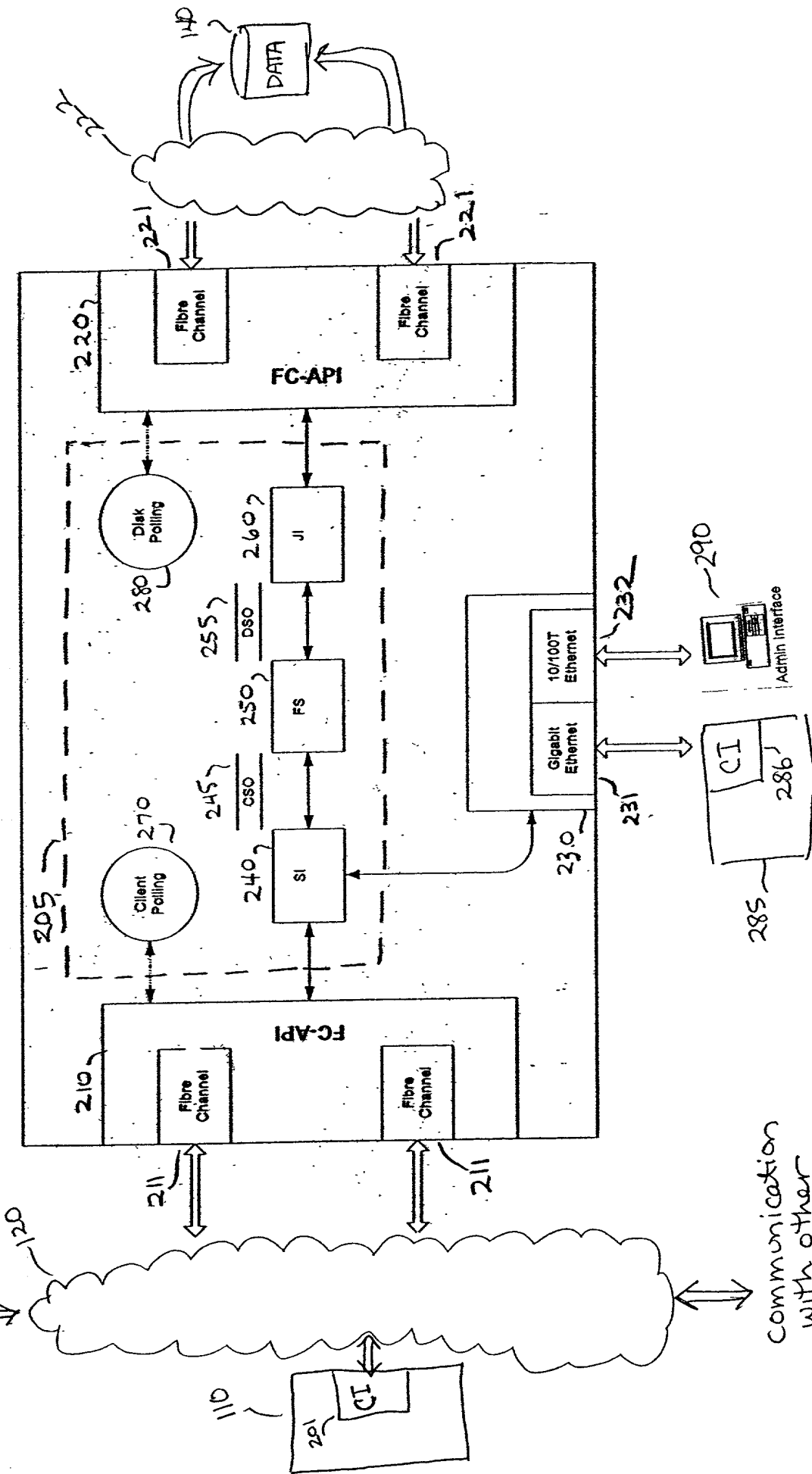


FIGURE 2 : One Embodiment of a Server Node

communication with other server nodes

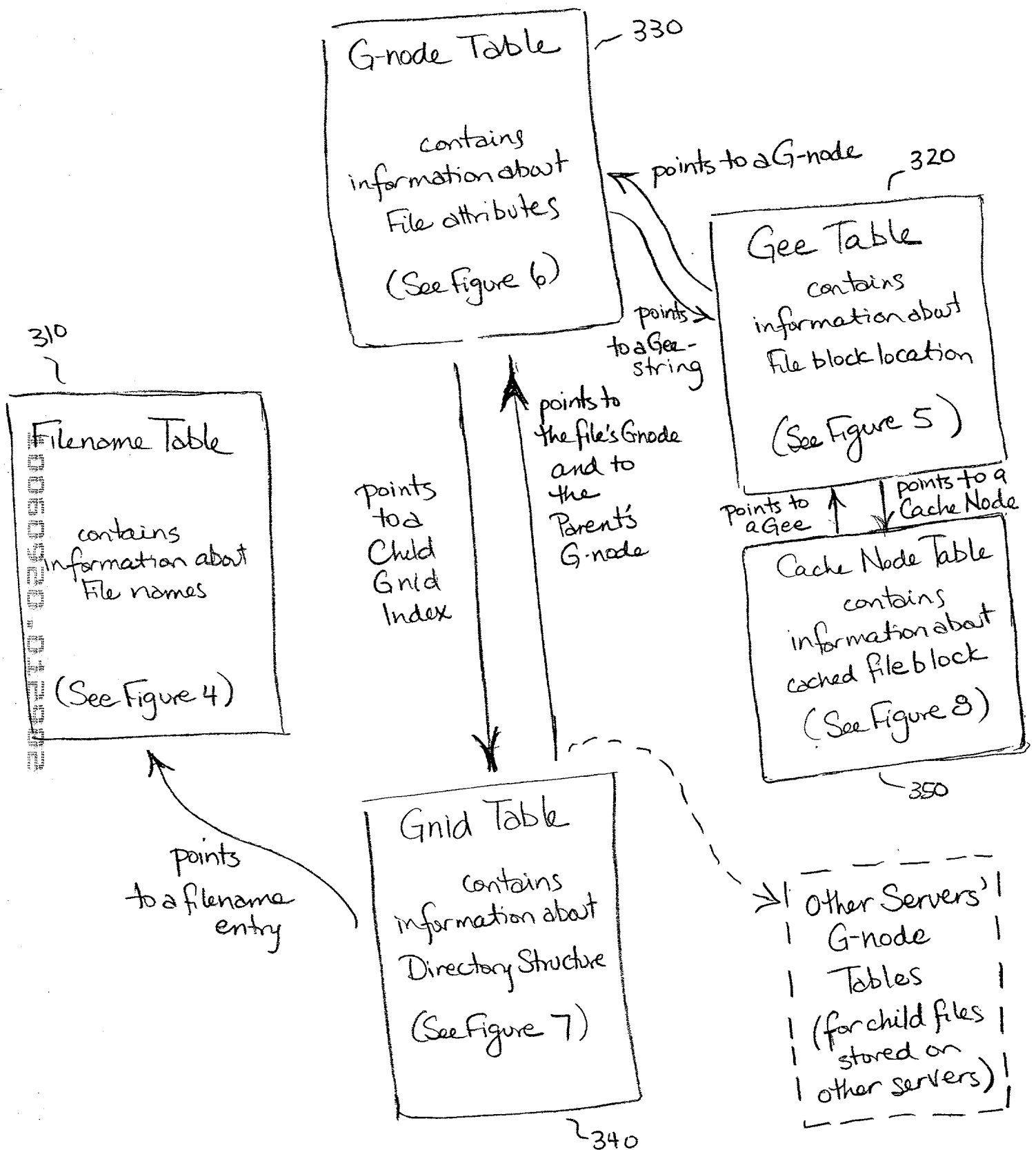


FIGURE 3 - Five metadata structures

310

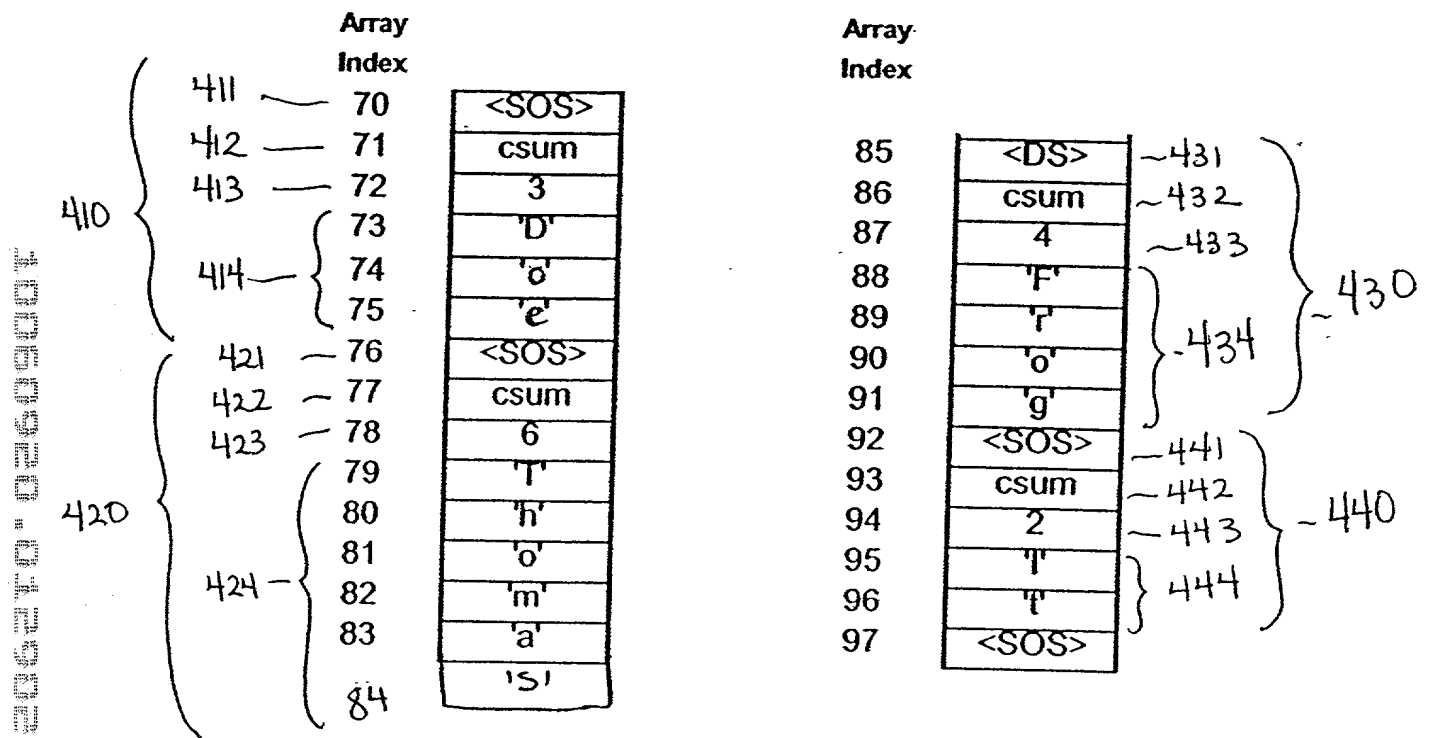


FIGURE 4 - Sample Portion of a Filename Table

320

590

591

592

	Index	G-Code	Data	File Logical Block	
510-	45	GNODE	Gnode = 67, Extent = 2, Root = TRUE		550
511-	46	DATA	Disk Logical Blocks: 456, 457 Drive 13	1	
512-	47	DATA	Disk Logical Blocks: 667, 668 Drive 15	2	
513-	48	DATA	Disk Logical Blocks: 112, 113 Drive 19	3	
514-	49	PARITY	Disk Logical Blocks: 554, 555 Drive 2		
515-	50	DATA	Disk Logical Blocks: 458, 459 Drive 13	4	
516-	51	DATA	Disk Logical Blocks: 669, 670 Drive 15	5	
517-	52	DATA	Disk Logical Blocks: 119, 120 Drive 19	6	
518-	53	PARITY	Disk Logical Blocks: 556, 557 Drive 2		
519-	54	LINK	Index 76		
		551
520-	76	GNODE	Gnode = 67, Extent = 3, Root = FALSE		
521-	77	DATA	Disk Logical Blocks: 460, 461, 462 Drive 13	7	
522-	78	DATA	Disk Logical Blocks: 671, 672, 673 Drive 15	8	
523-	79	PARITY	Disk Logical Blocks: 121, 122, 123 Drive 19		
524-	80	LINK	Index 88		552
		
525-	88	GNODE	Gnode = 67, Extent = 3, Root = FALSE		
526-	89	DATA	Disk Logical Blocks: 463, 464, 465 Drive 13	9	
527-	90	DATA	Disk Logical Blocks: 674, 675, 676 Drive 15	10	
528-	91	PARITY	Disk Logical Blocks: 124, 125, 126 Drive 19		
529-	92	GNODE	Gnode = 43, Extent = 4, Root = FALSE		
		

FIGURE 5 - Sample Portion of a Gee Table

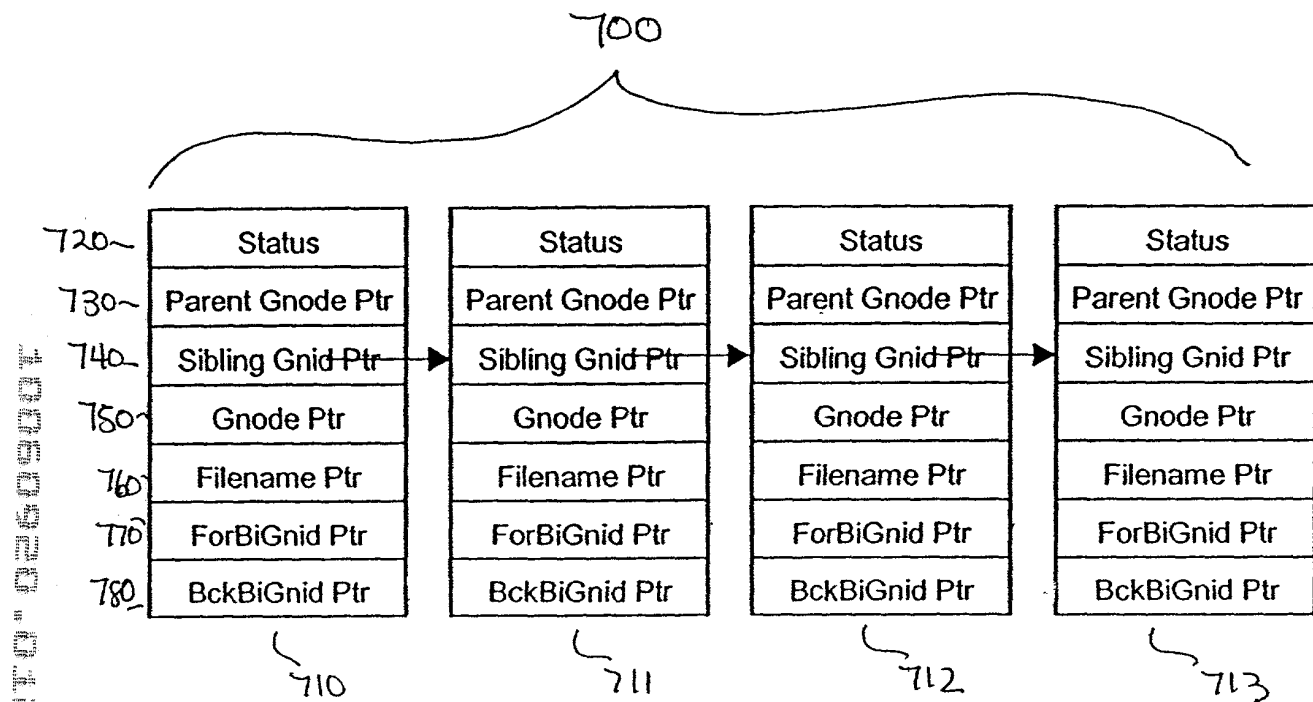


FIGURE 7- Structure of a Gnid String

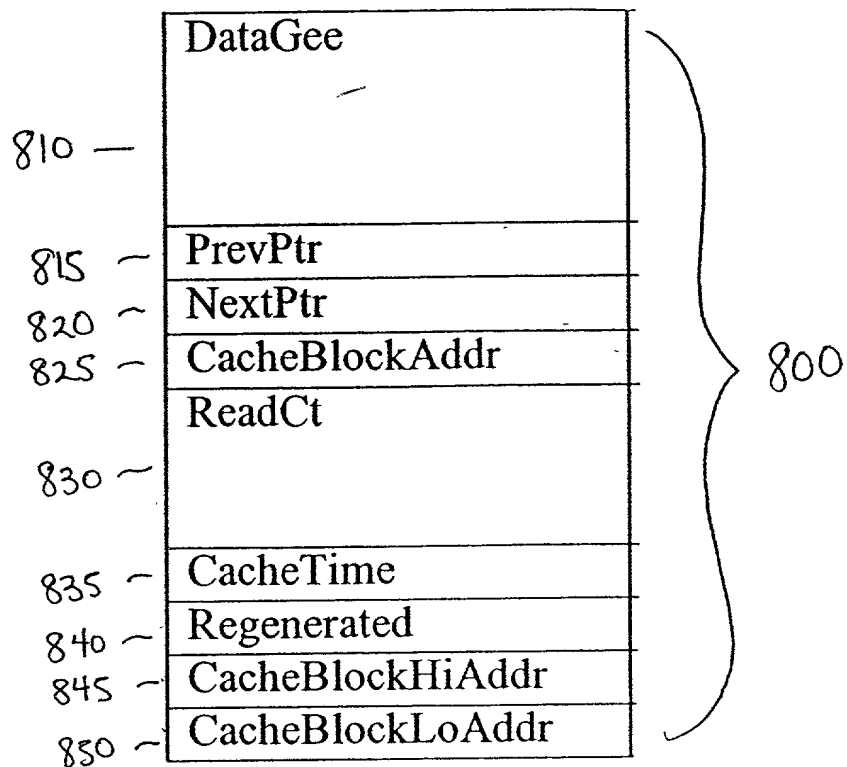


FIGURE 8a - Structure of a Cache Node

100669300.012002

350

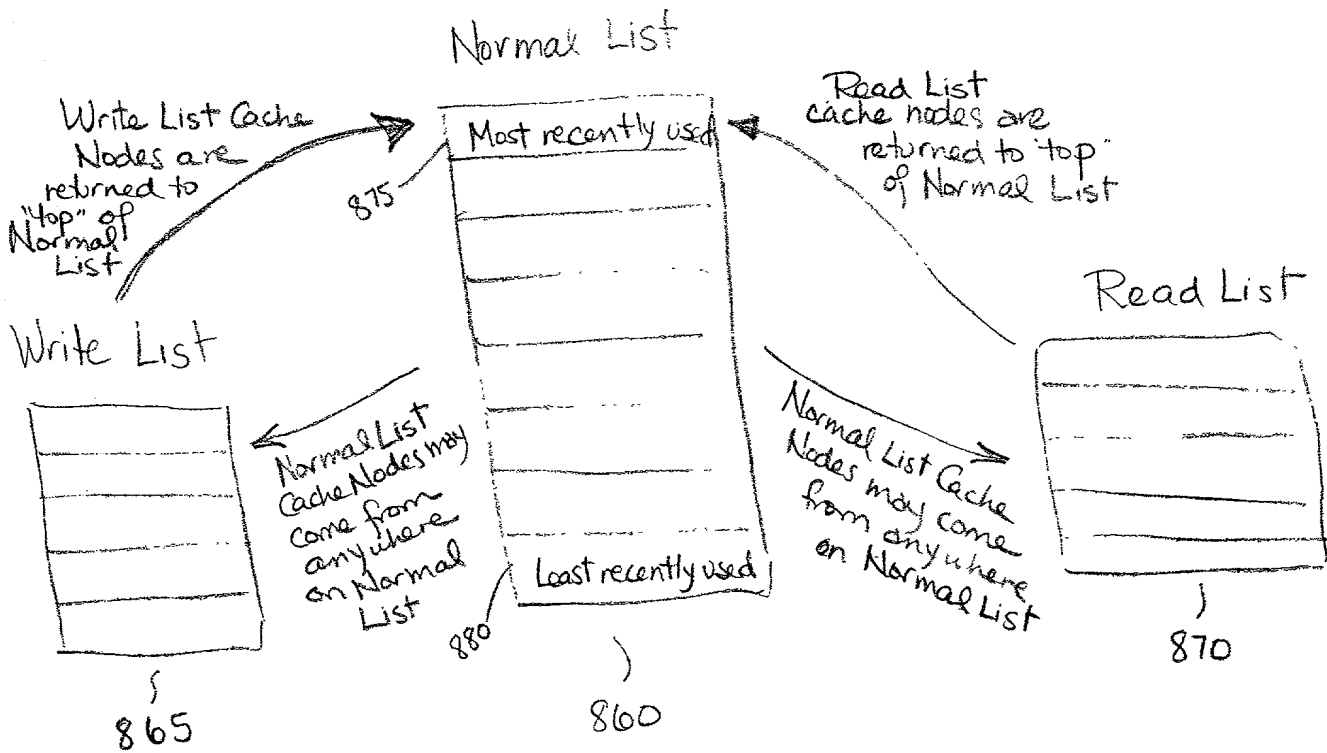


FIGURE 8B - Conceptual division of a Cache Node Table into Three Lists

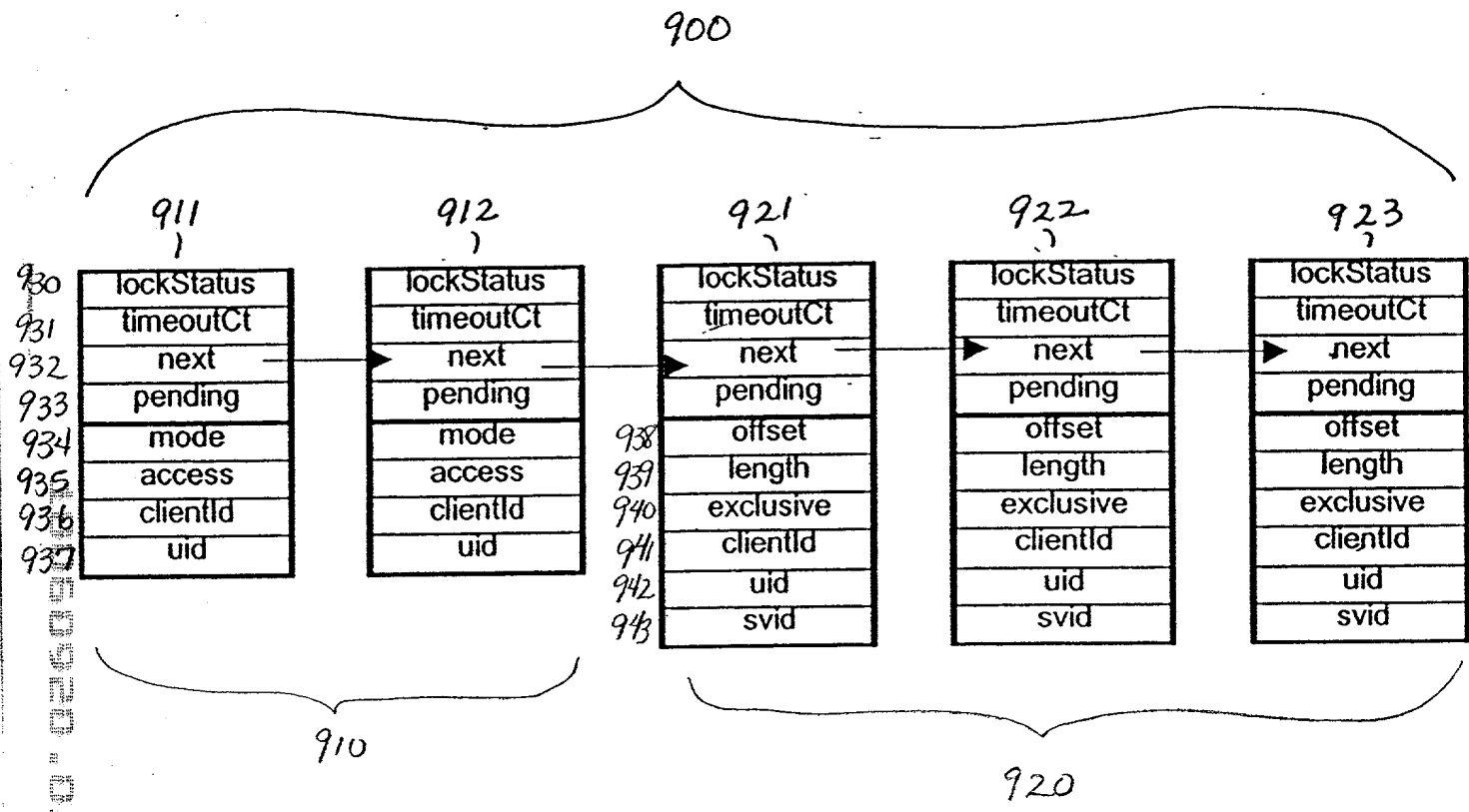


FIGURE 9 - A Sample Lock String

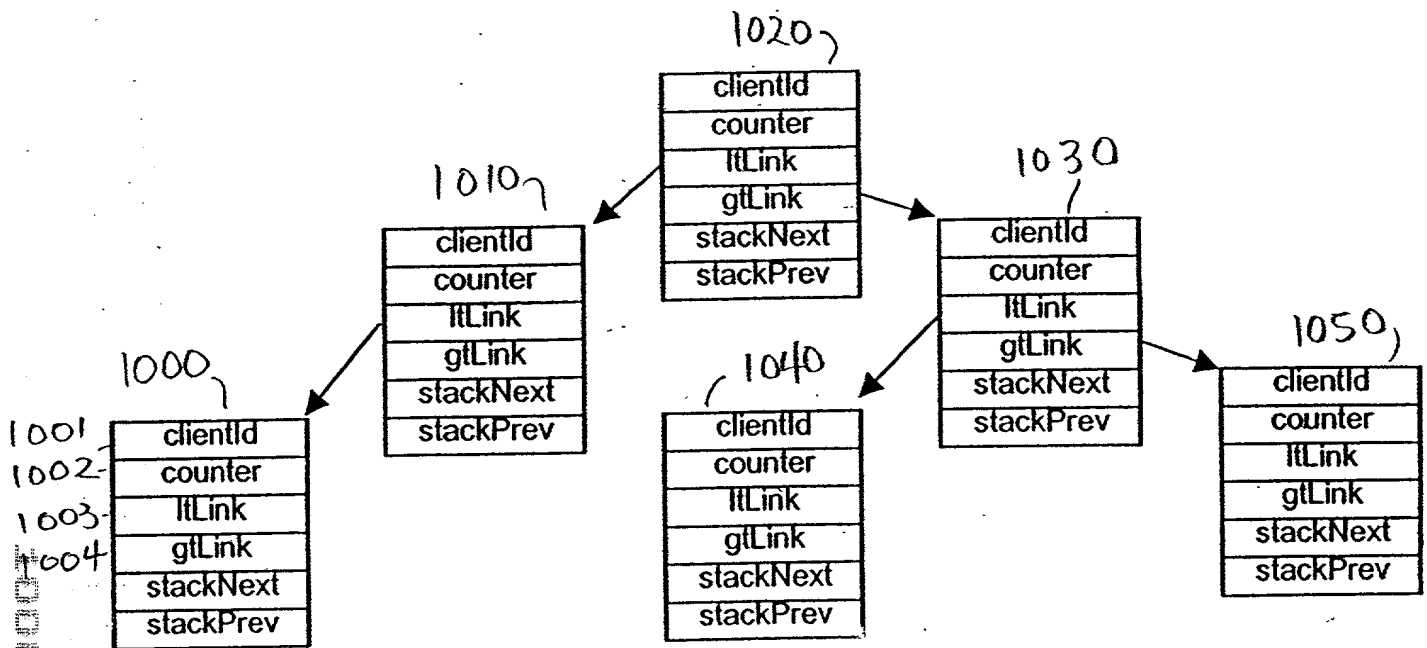


FIGURE 10 - Refresh Nodes configured as a binary tree.

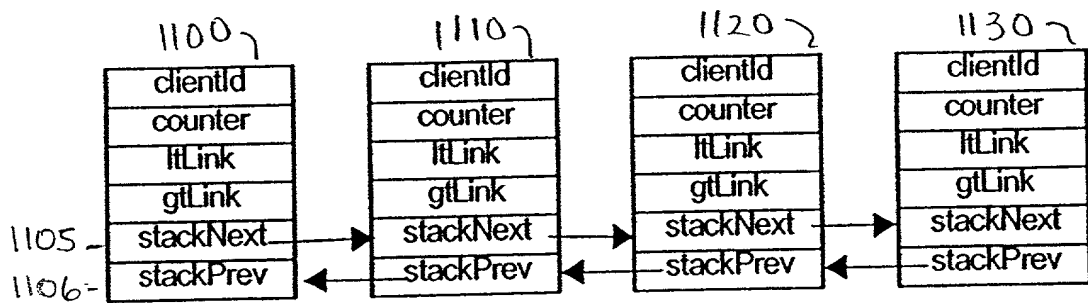


FIGURE 11 - Refresh Nodes configured as a doubly-linked list

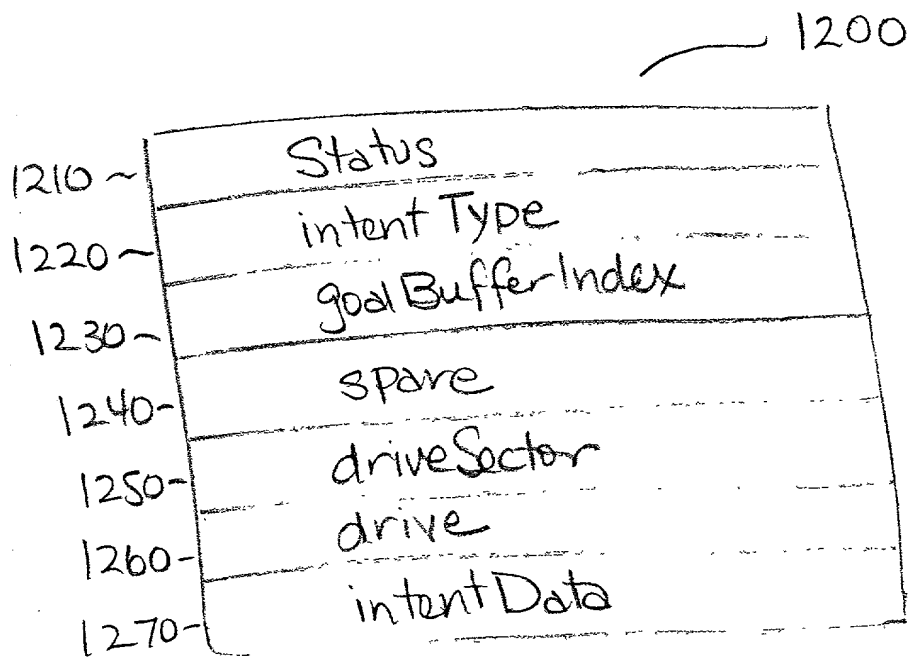


FIGURE 12 - Structure of an Intent Log Entry

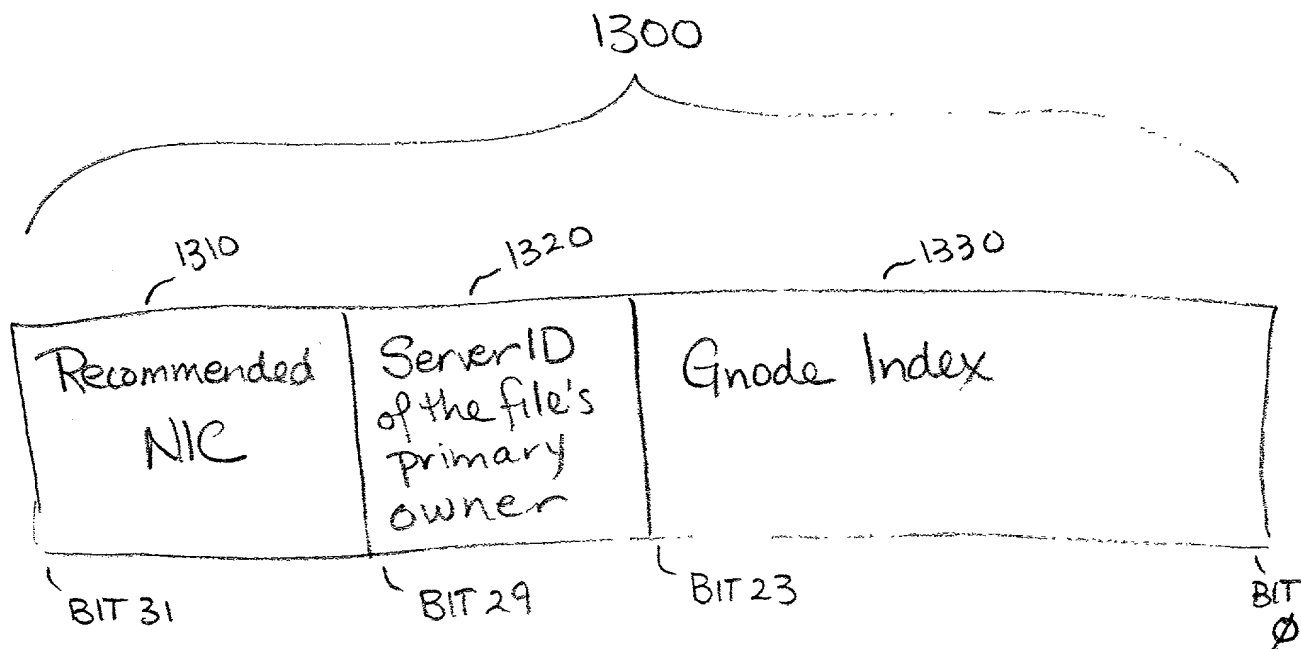


FIGURE 13 - Structure of a File Handle

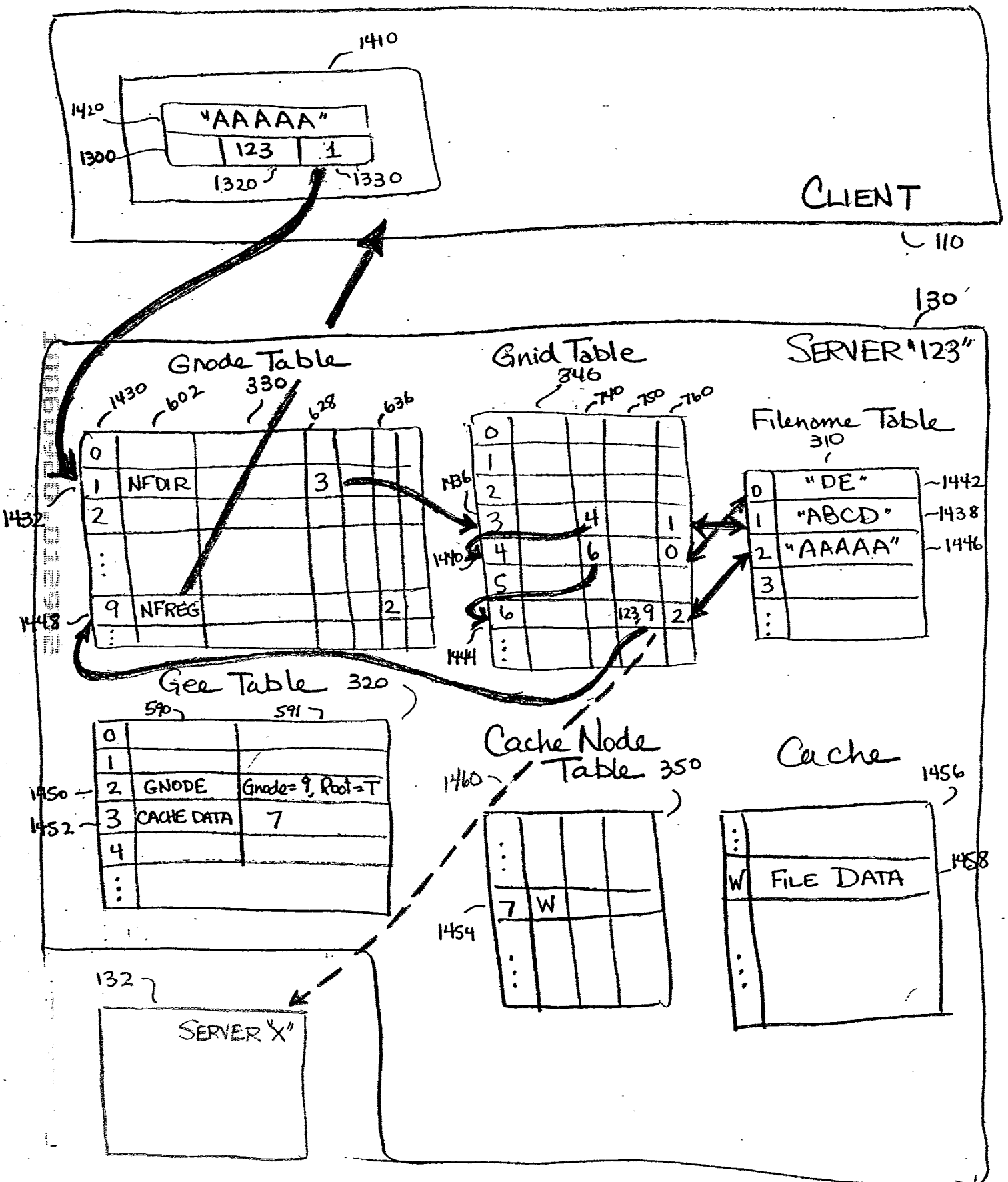


FIGURE 14a: Example of a File Look-Up

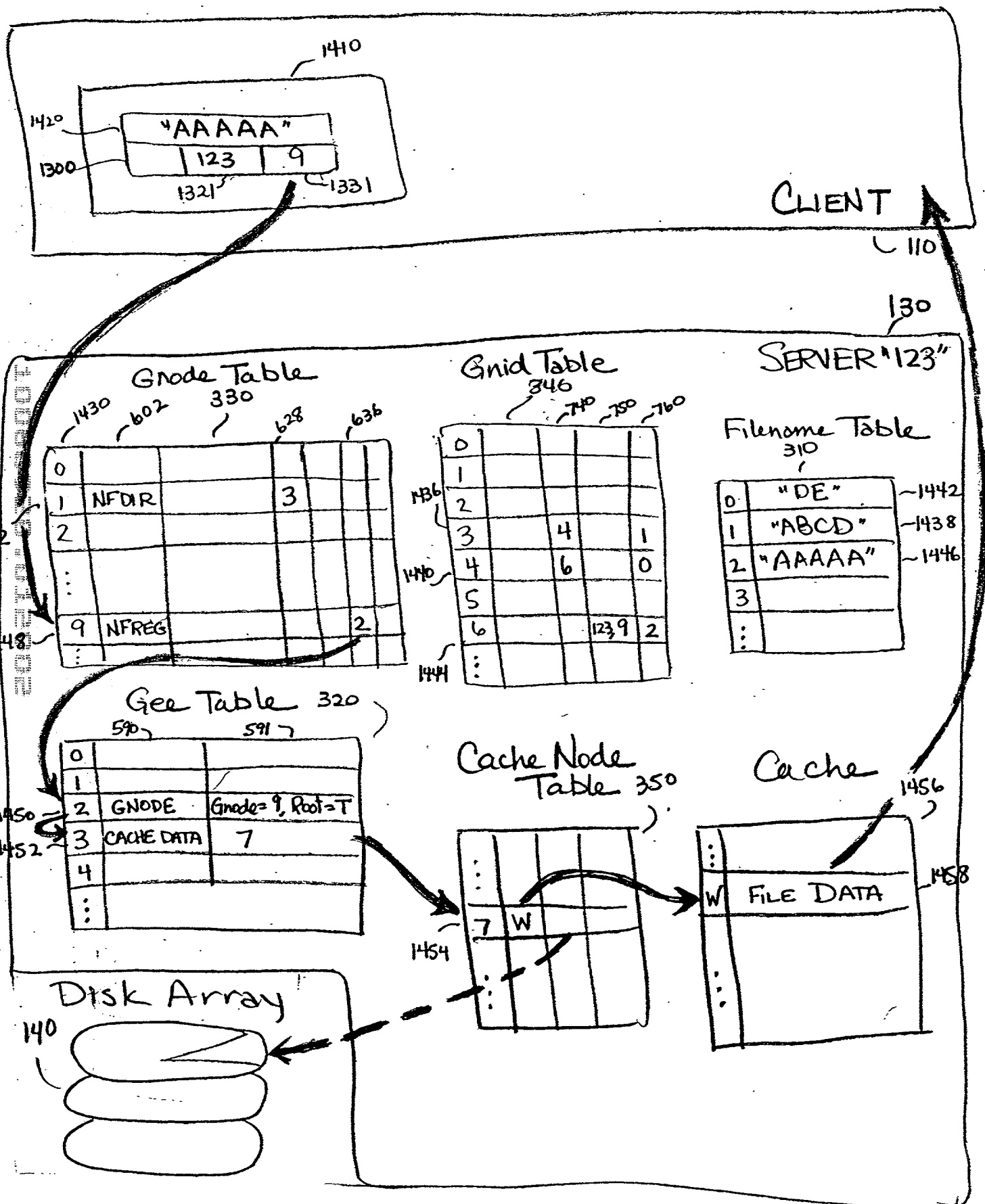


FIGURE 14b Example of a File Access

1500

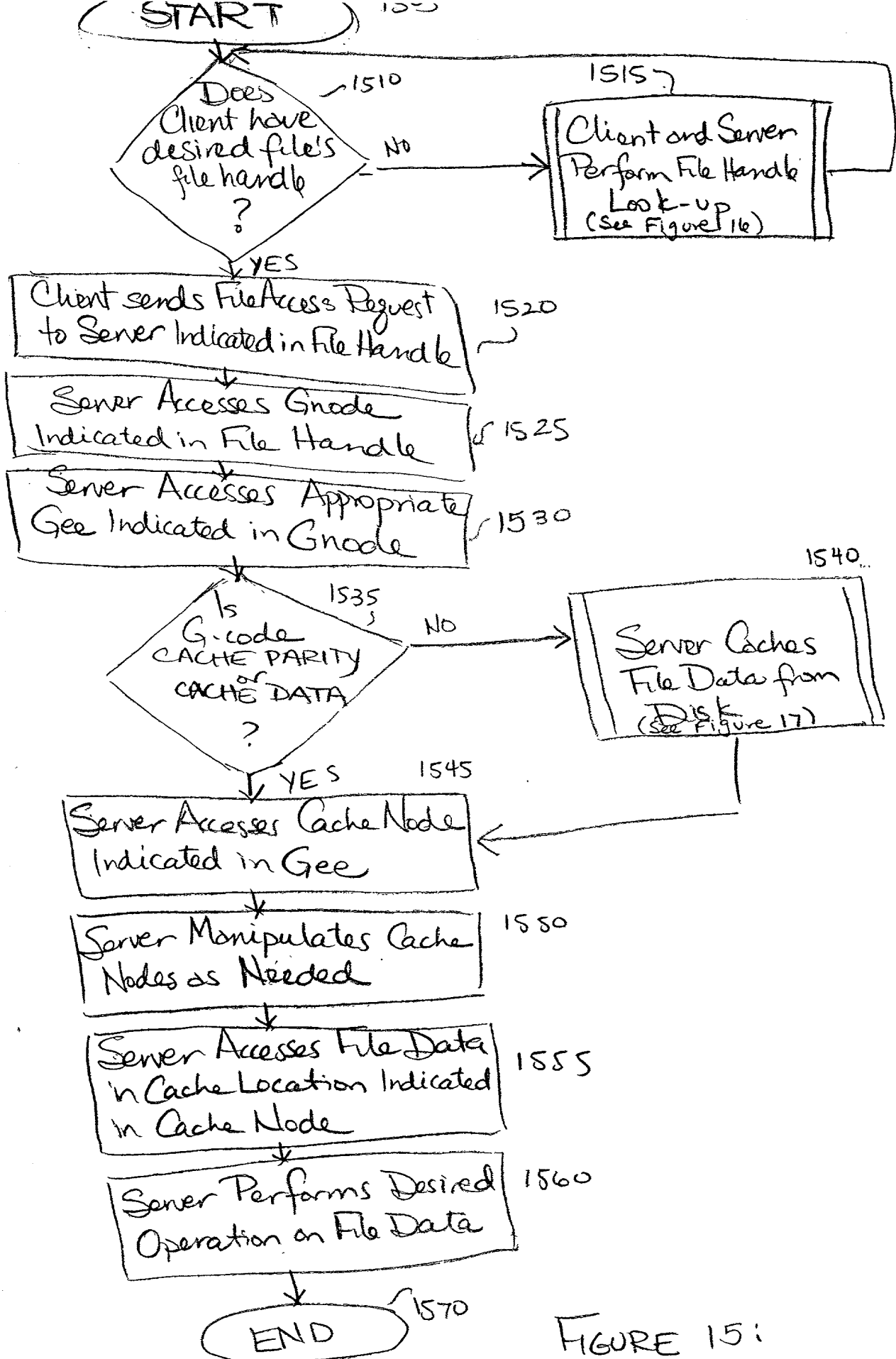


FIGURE 15:
Performing a File Access

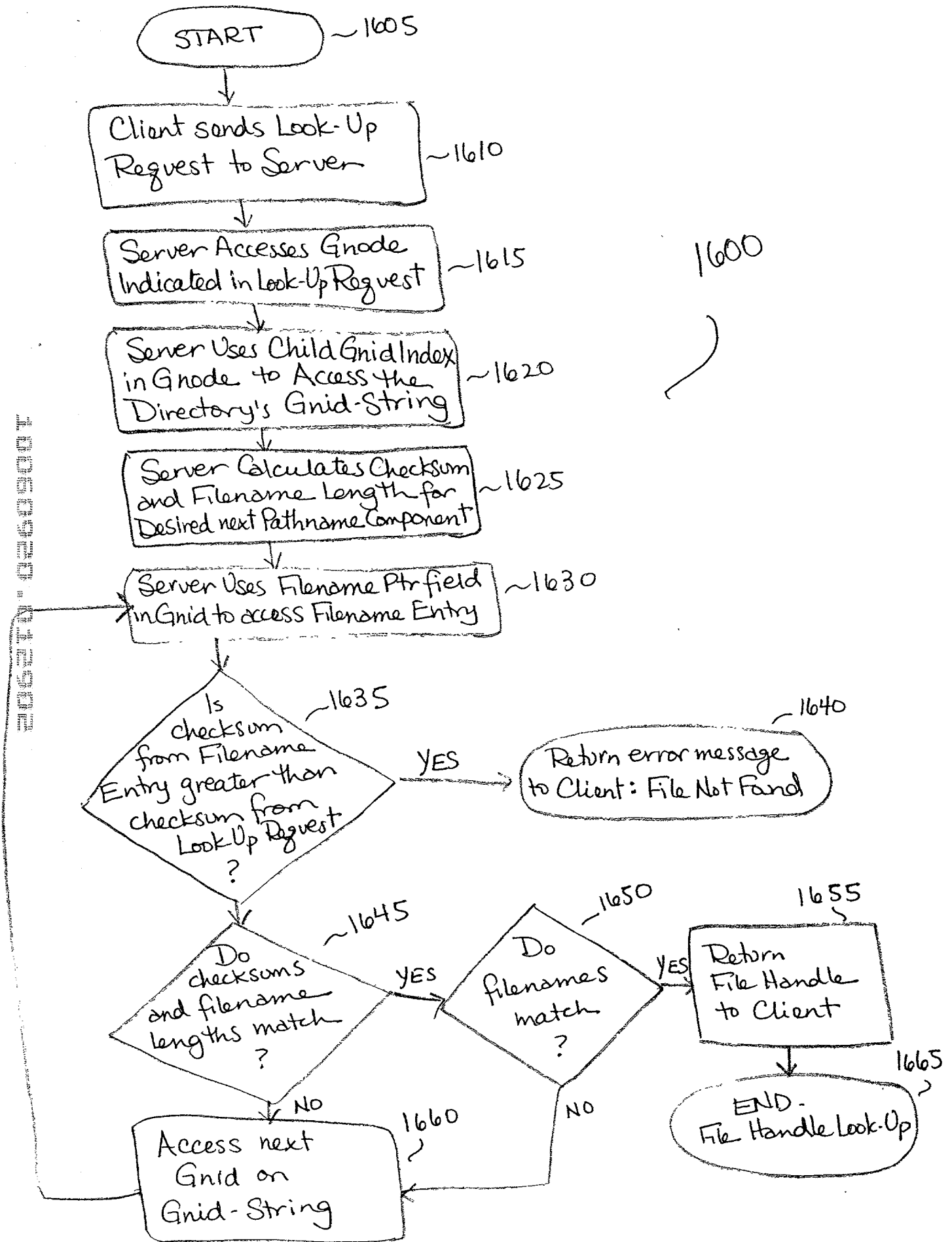


FIGURE 16: Performing a File Handle Look-Up

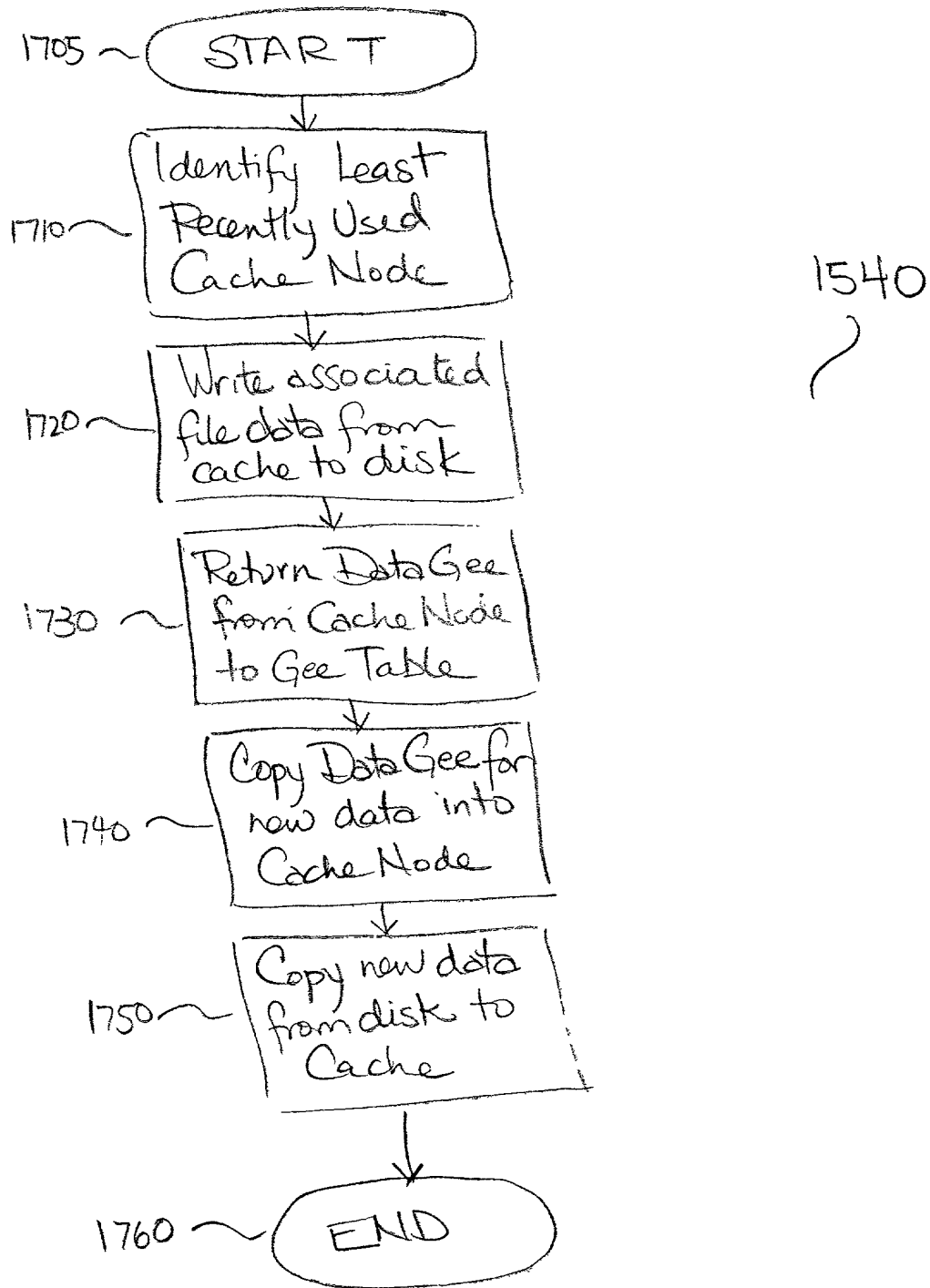


FIGURE 17: Caching File Data

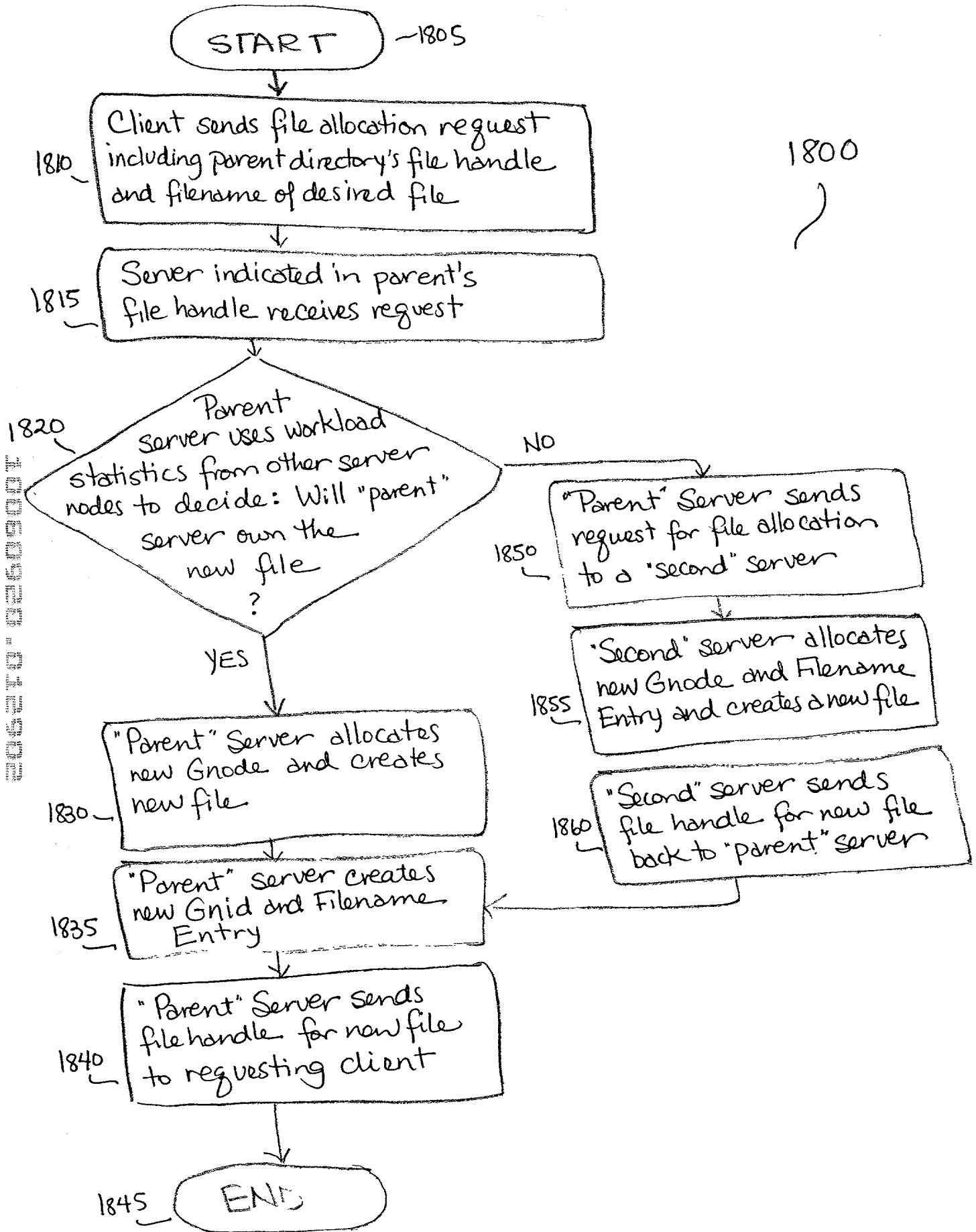


FIGURE 18 - File Allocation

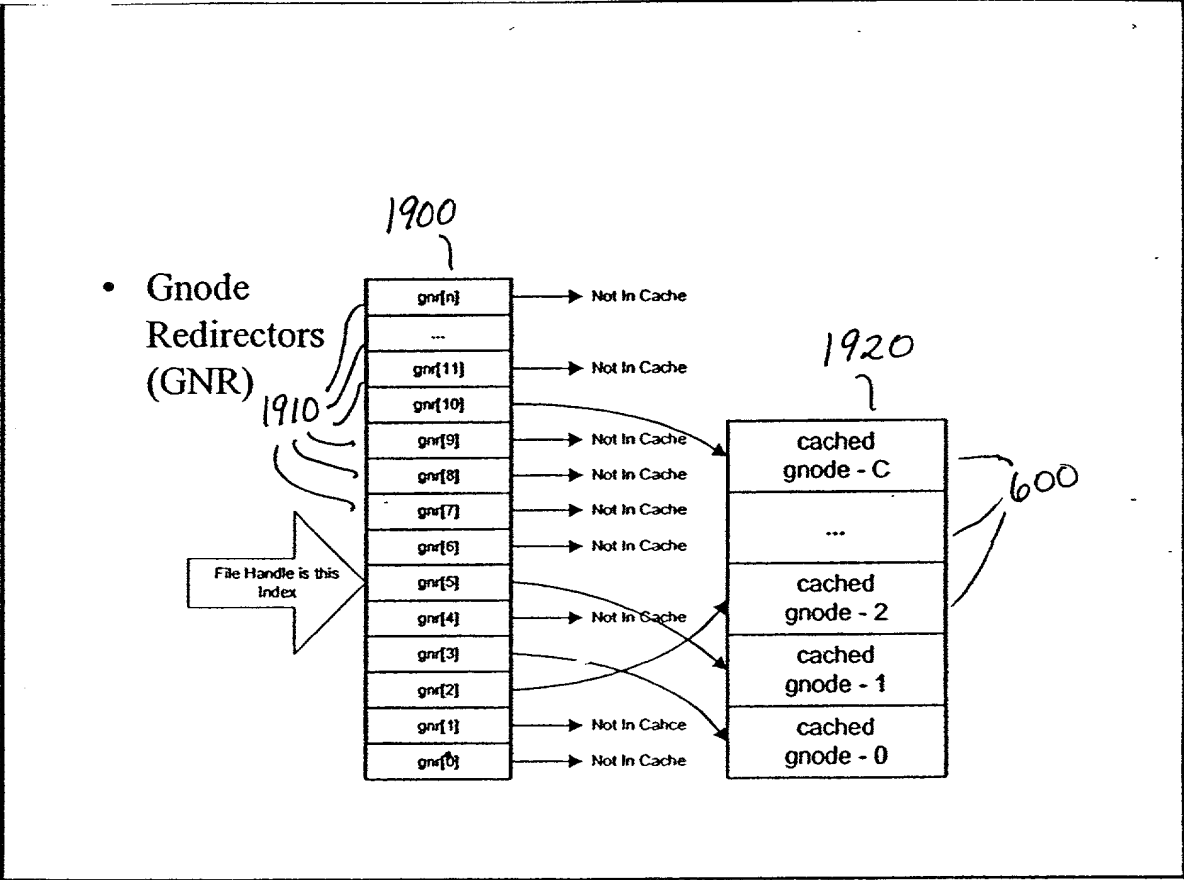


FIGURE 19

2000

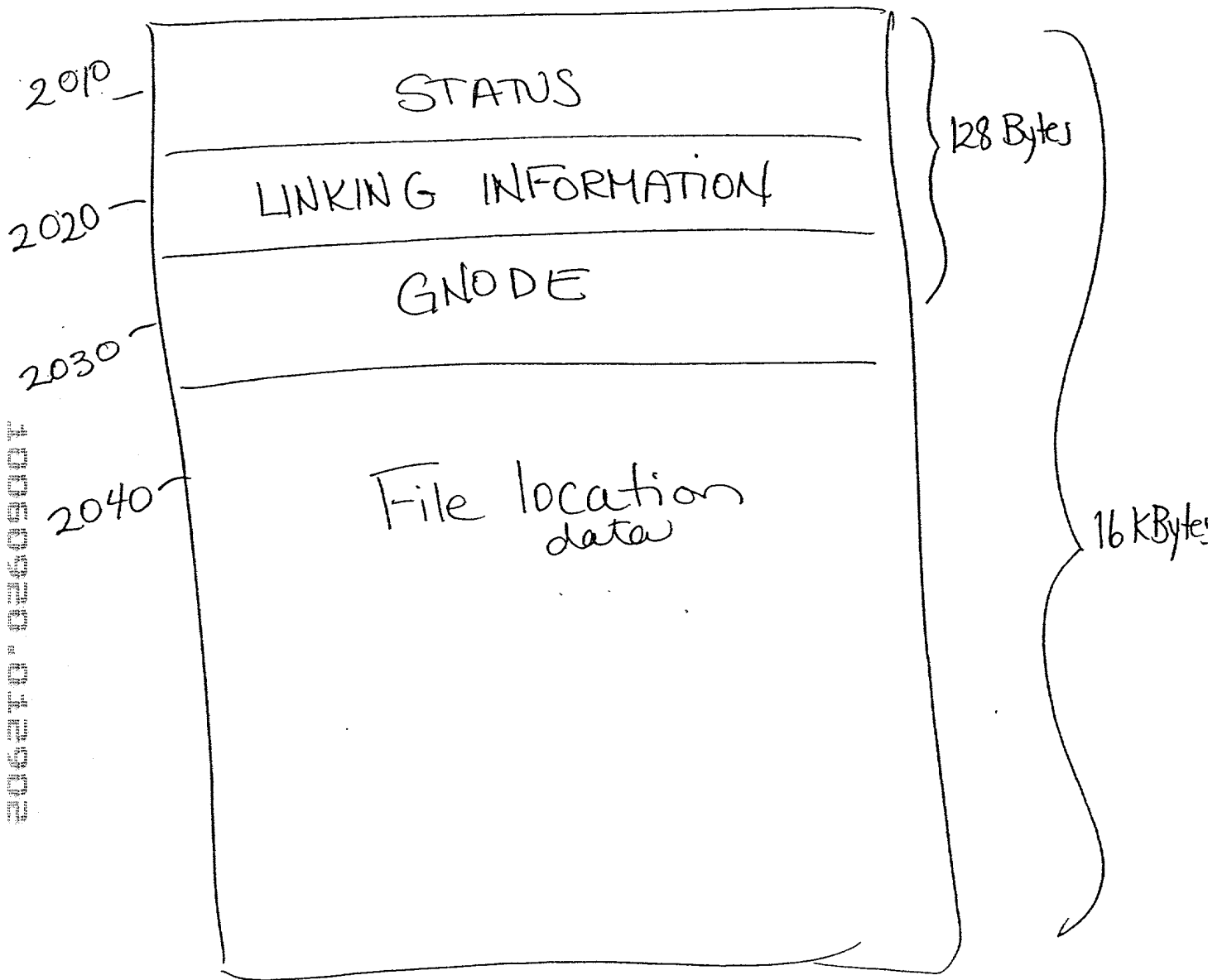


Figure 20a

The diagram illustrates a system architecture for processing data from a GNR (General Network Router) 1910. The GNR 1910 is connected to a SG (System Gateway) 2000. The SG 2000 is connected to four parallel processing paths, each corresponding to a different data size: small, medium, large, and really large. These paths are represented by dashed boxes labeled 2001, 2002, 2003, and 2004 respectively. The paths for small, medium, and large data sizes (2001, 2002, 2003) converge into a single path leading to a GSP (General Service Processor) 2007. The path for really large data (2004) leads to a GSPLB (General Service Processor Load Balancer) 2009. The GSP 2007 is connected to a GEE (General Event Engine) 2006, which is connected to a DATA block 2005. The GSPLB 2009 is also connected to the DATA block 2005. The GSP 2007 is also connected to a GSPB (General Service Processor Buffer) 2008, which is connected to the GSPLB 2009.

FIGURE 20b

CONVENTIONAL RAID MAPPING (PRIOR ART)

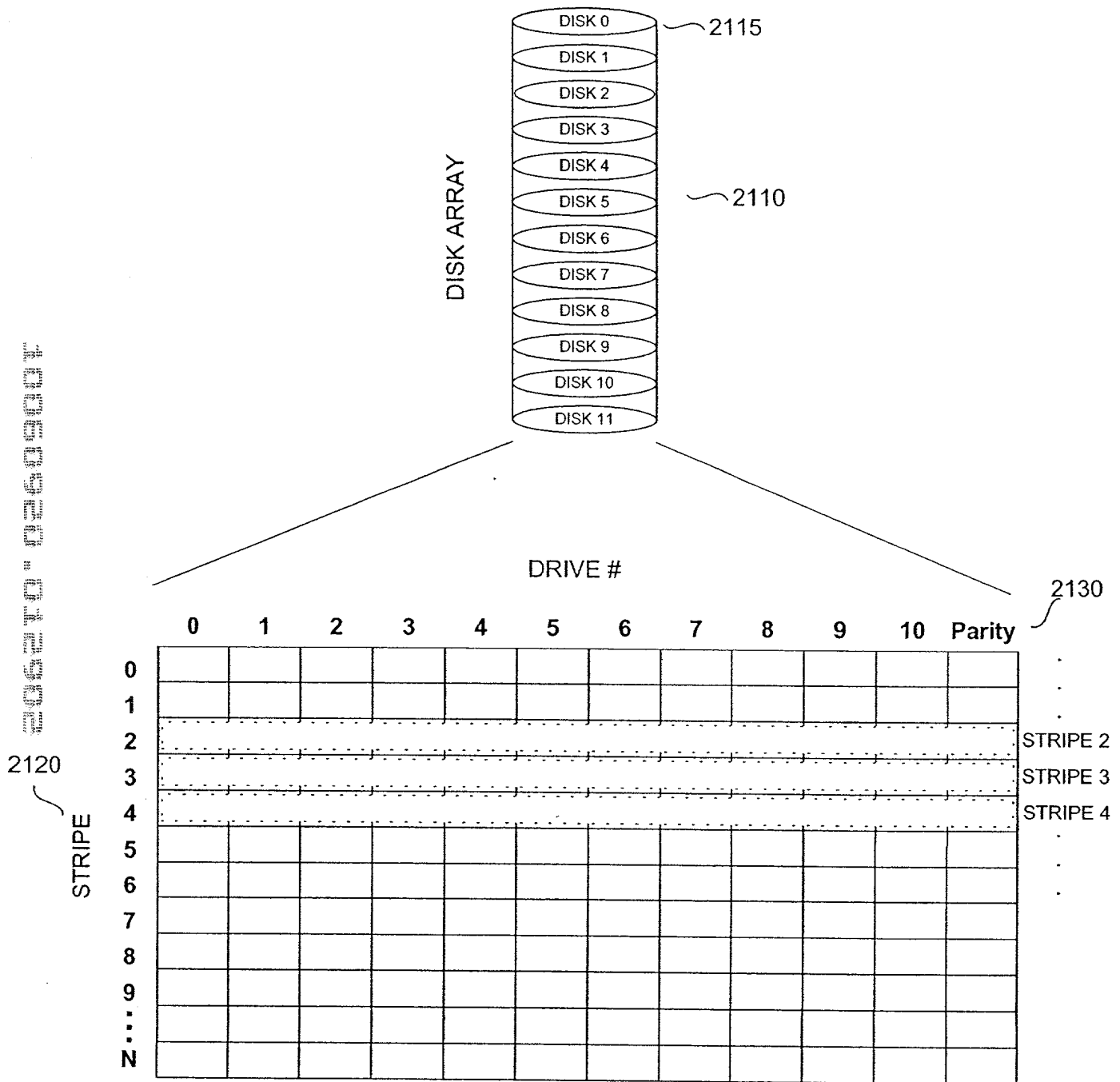


FIGURE 21

FIGURE 22A

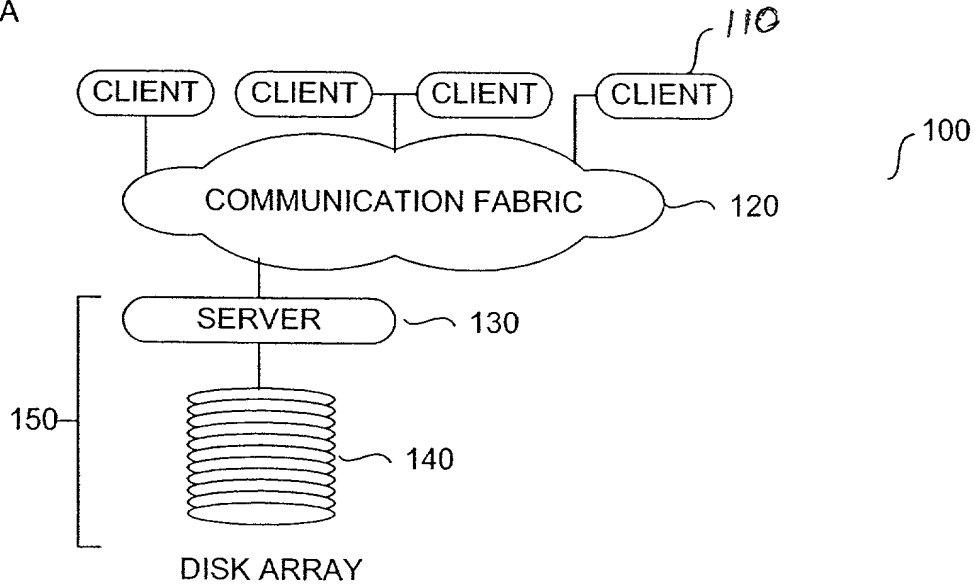
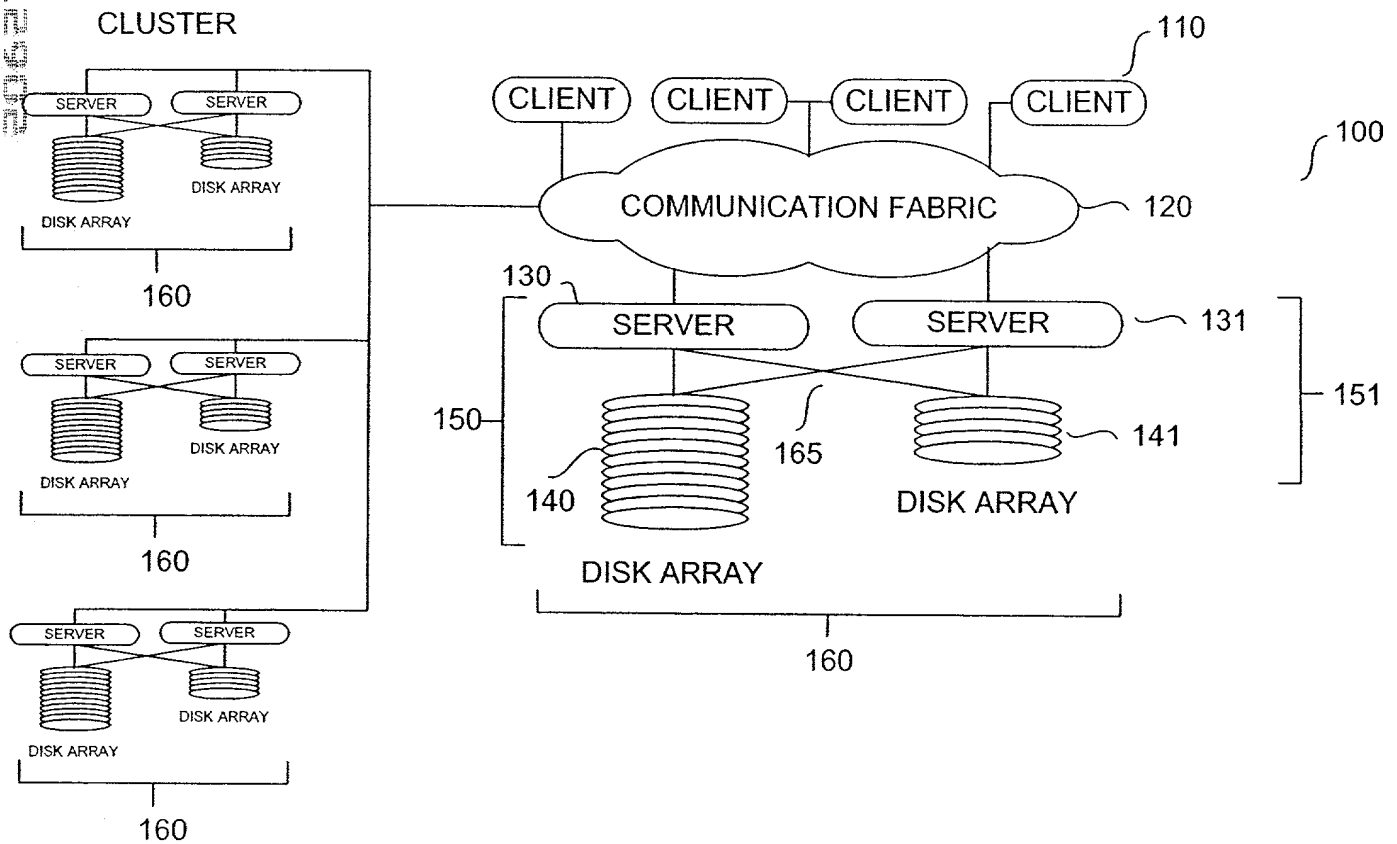


FIGURE 22B



DATE **20** JUL 1964

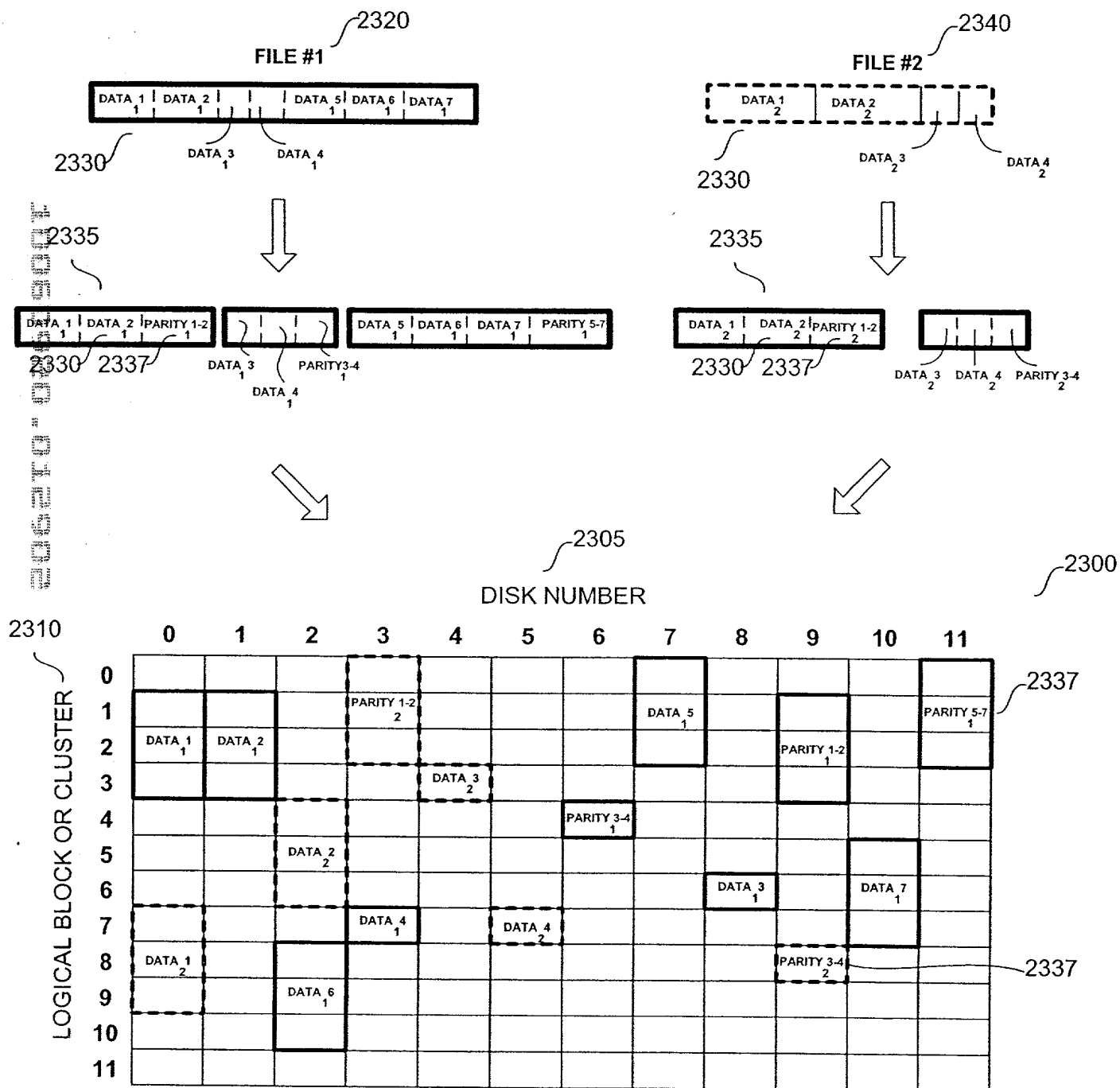


FIGURE 24A

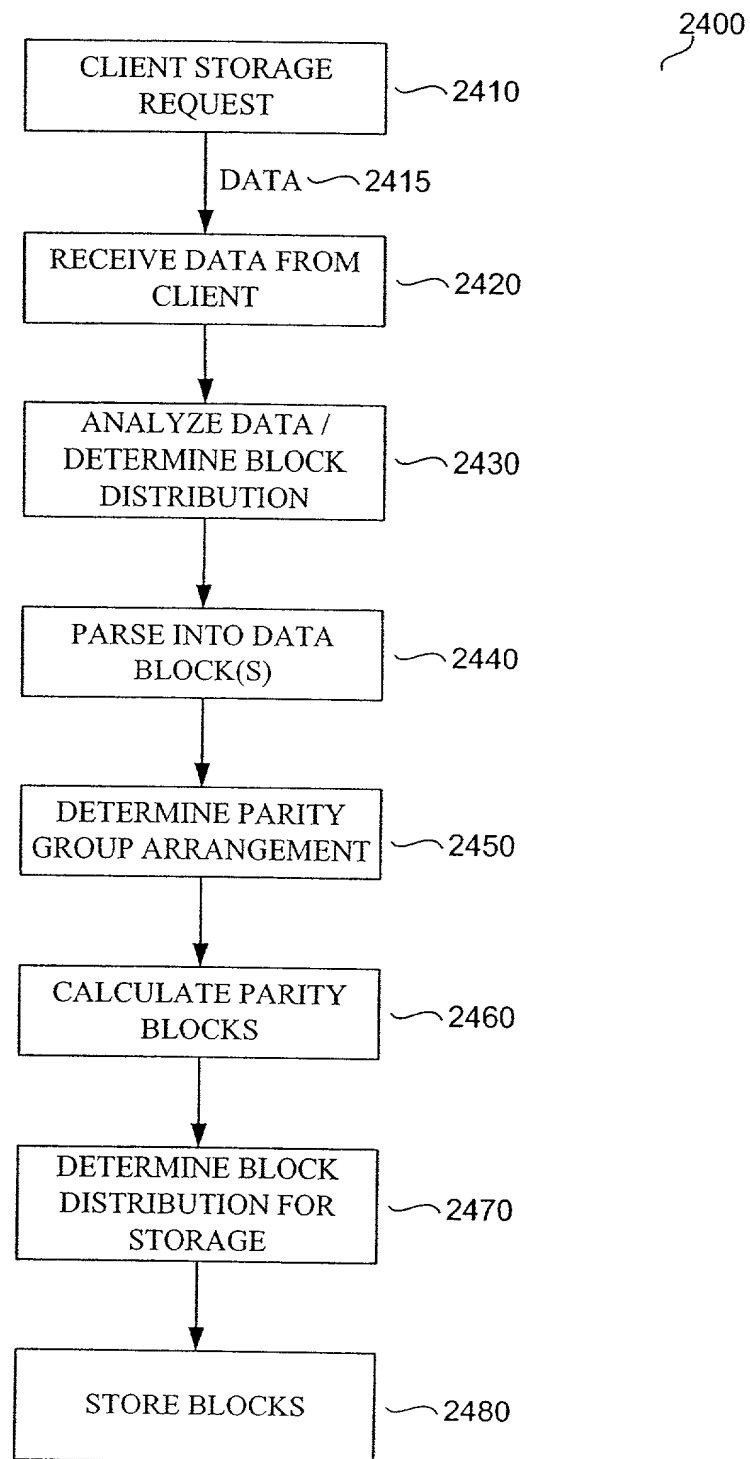


FIGURE 24B

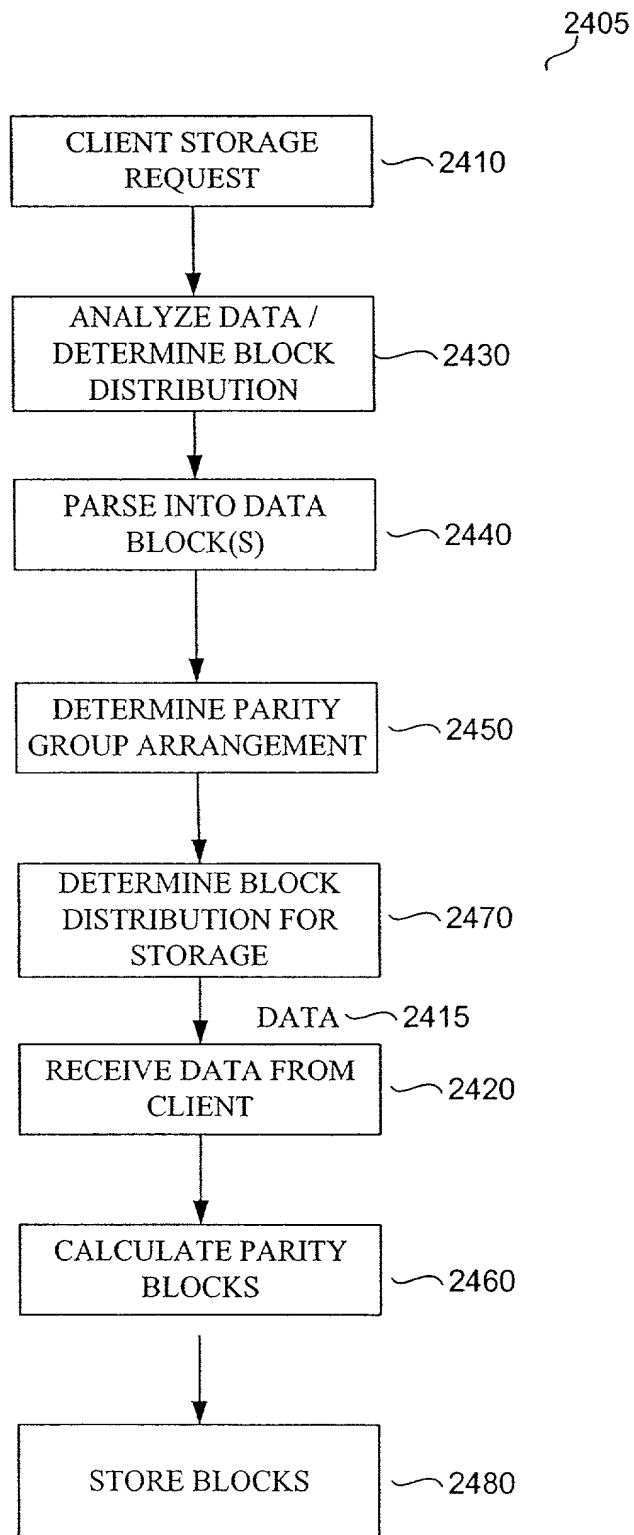


FIGURE 25

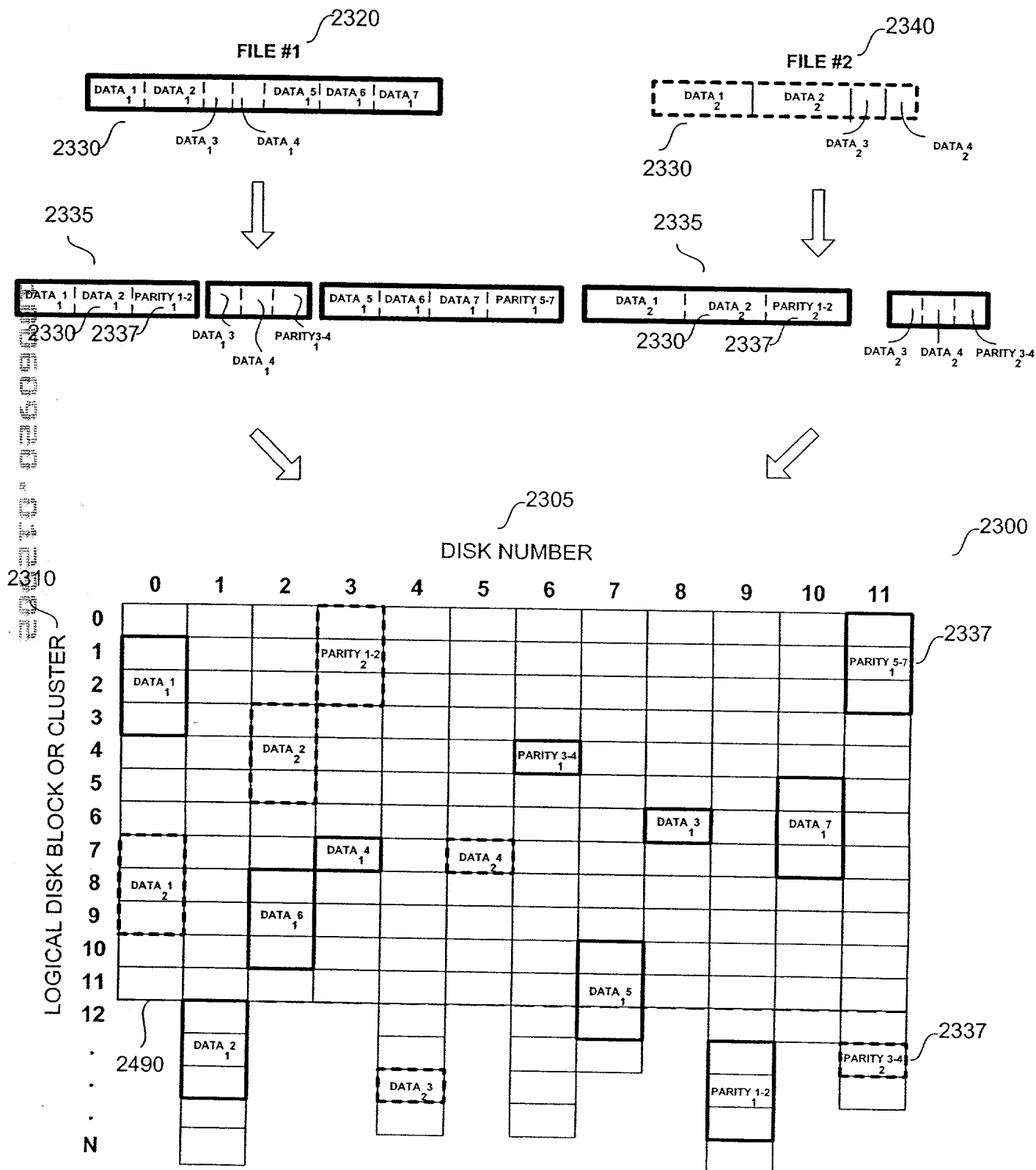


FIGURE 26A

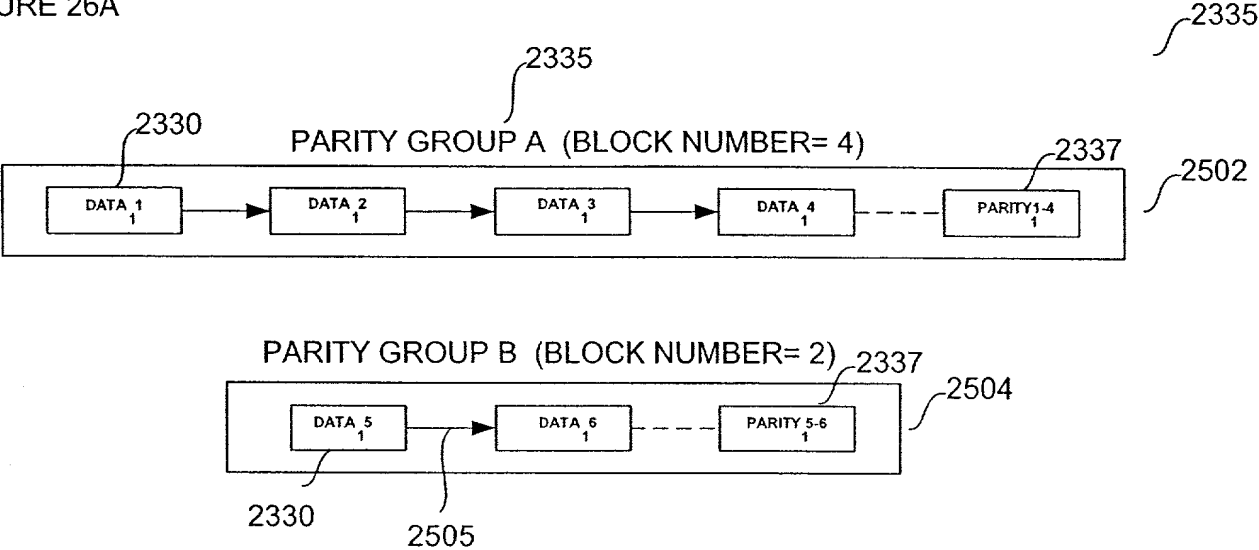
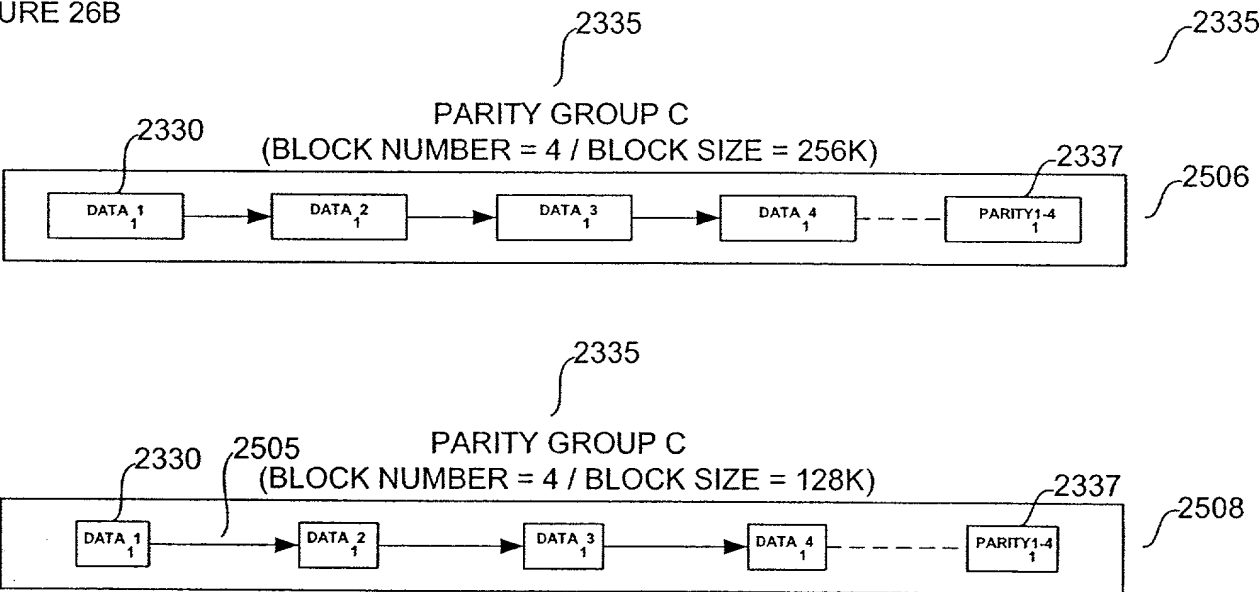


FIGURE 26B



DISK ARRAY INITIALIZATION USING GEE TABLE SPACE ALLOCATION

2530

2532	2534	2536	
INDEX	G-CODE	DATA	2542
...	
45	GNODE	EXTENT=2	
46	DATA	BLOCKS 456, 457: Drive 13	2540
47	DATA	BLOCKS 667, 668: Drive 15	
48	DATA	BLOCKS 112, 113: Drive 19	
49	PARITY	BLOCKS 554, 555: Drive 2	
...	
76	GNODE	EXTENT=3	
77	DATA	BLOCKS 460, 461, 462: Drive 13	2540
78	DATA	BLOCKS 671, 672, 673: Drive 15	
79	PARITY	BLOCKS 121, 122, 123: Drive 19	
...	
88	GNODE	EXTENT=2	
89	DATA	BLOCKS 463, 464, 465: Drive 2	2540
90	DATA	BLOCKS 674, 675, 676: Drive 5	
91	PARITY	BLOCKS 124, 125, 126: Drive 13	
...			

FIGURE 27

ARRAY PREPARATION / G-TABLE FORMATTING

2448

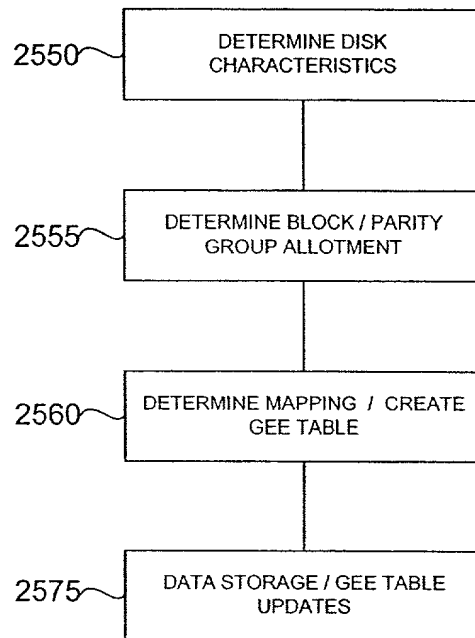


FIGURE 28

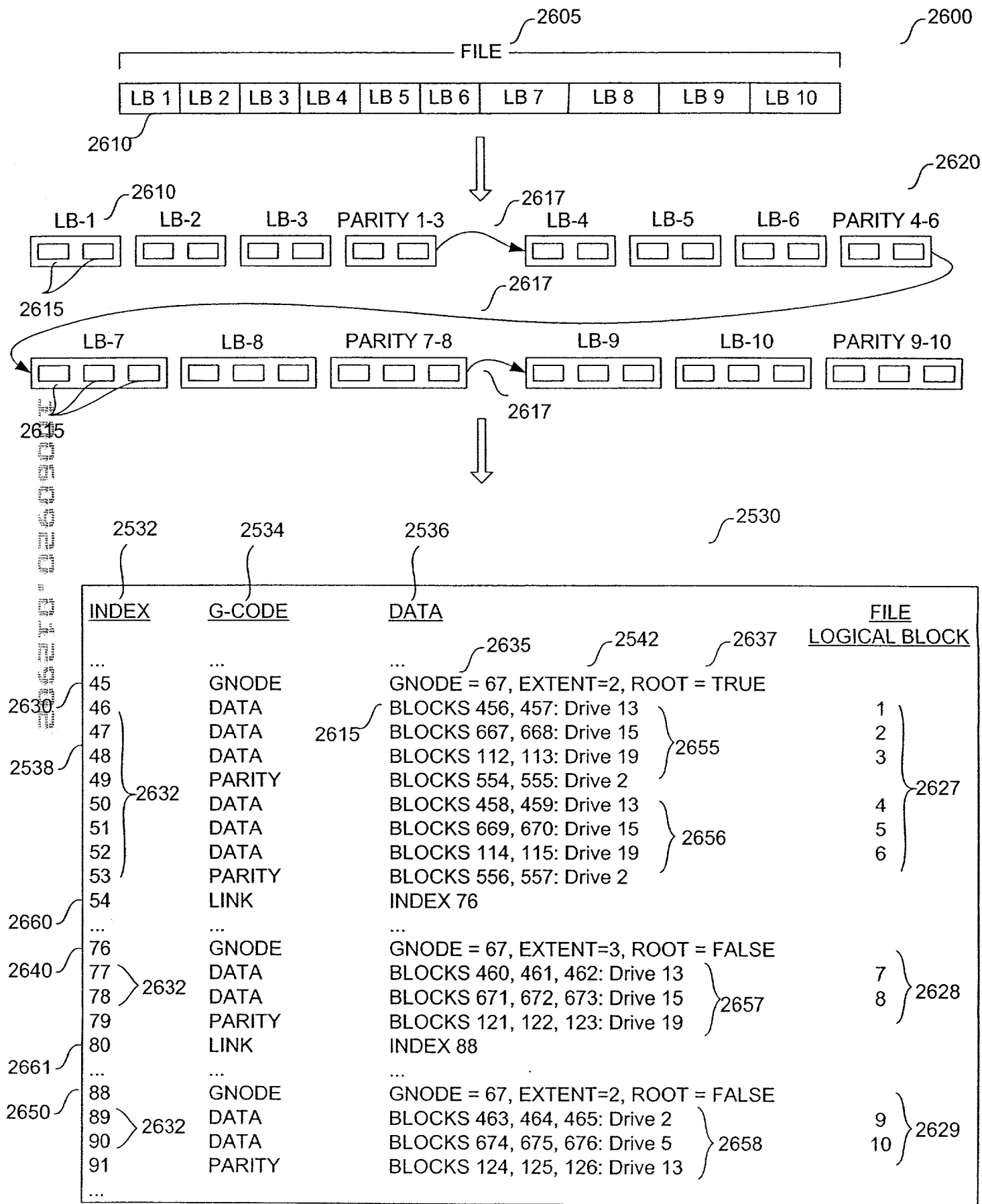


FIGURE 29

DRIVE FAILURE RECOVERY MECHANISM

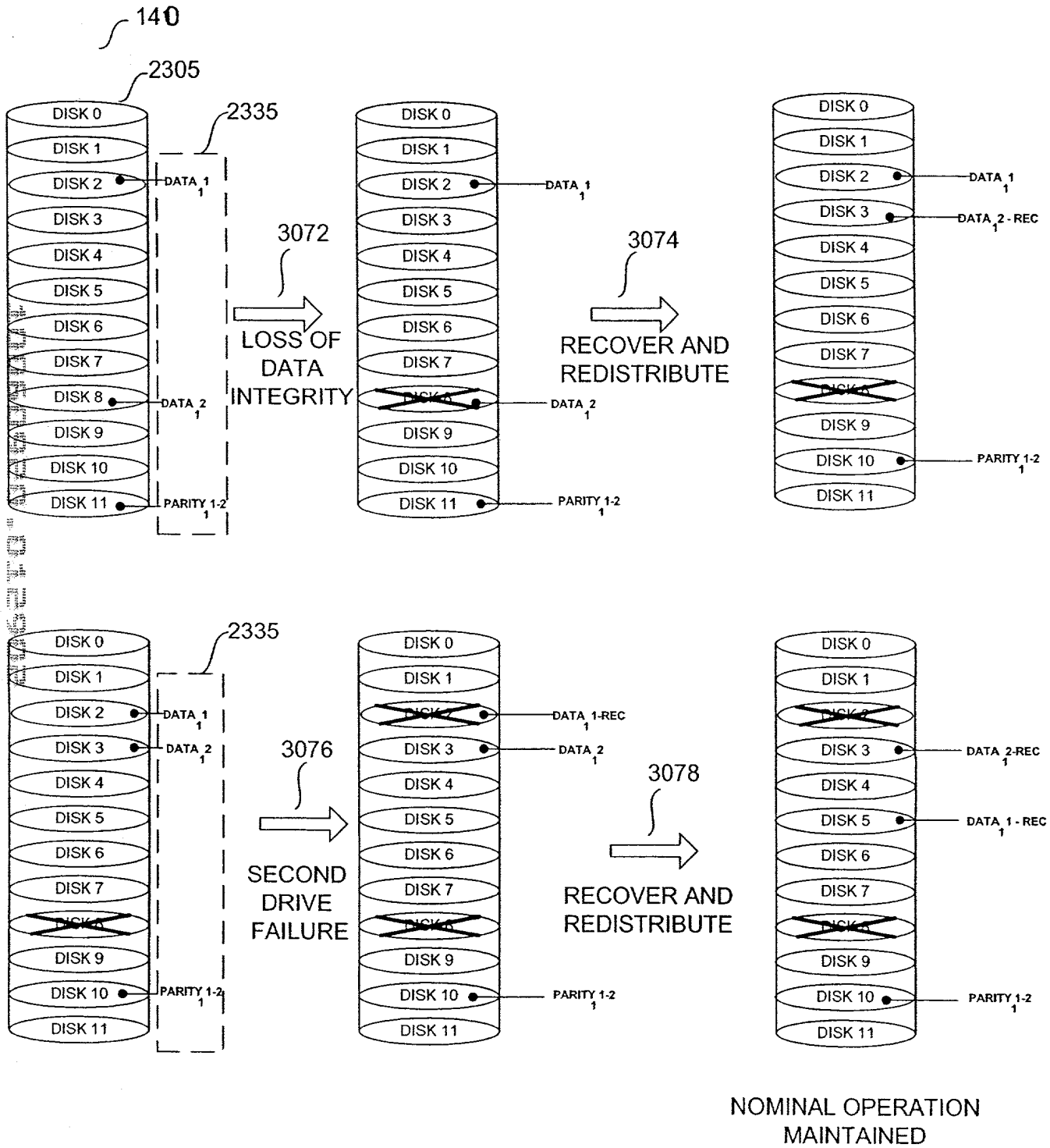


FIGURE 30

DATA RECOVERY
PROCESS

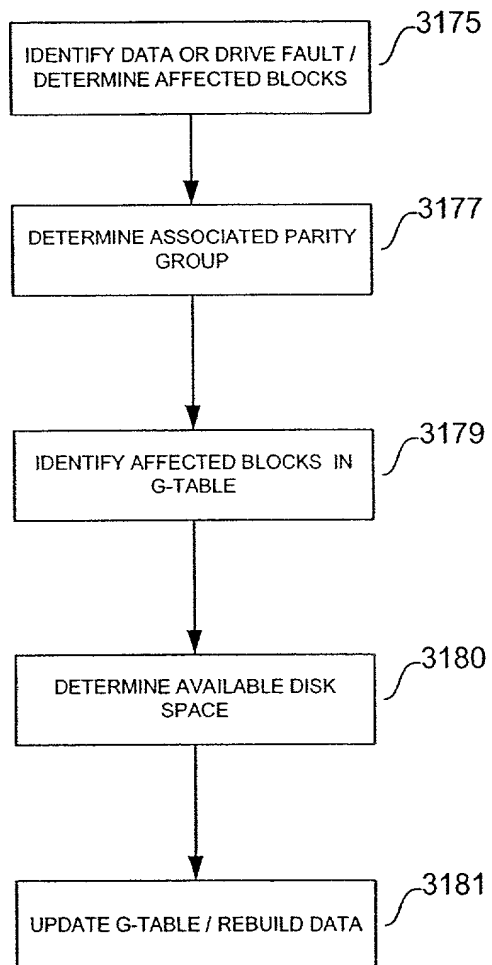


FIGURE 31

2025-10-02 09:00

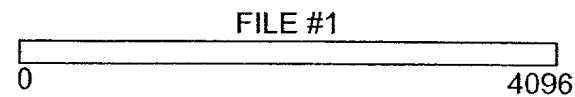
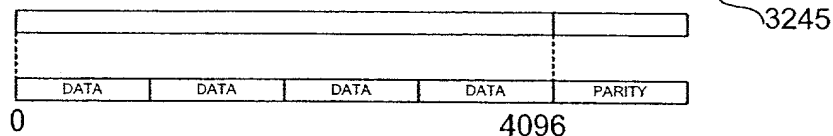


FIGURE 32A

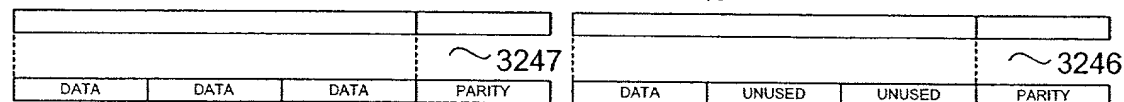
FILE #1 W/ PARITY -- 4-BLOCK PARITY GROUP -- EXTENT = 2
5120 BYTES TOTAL / UTILIZATION = 100%

3240



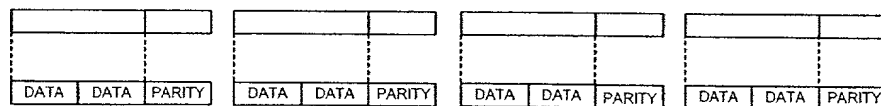
FILE #1 W/ PARITY -- 3-BLOCK PARITY GROUP -- EXTENT = 2
8192 BYTES TOTAL / UTILIZATION = 66%

3241



FILE #1 W/ PARITY -- 2-BLOCK PARITY GROUP -- EXTENT = 1
6144 BYTES TOTAL / UTILIZATION = 100%

3242



FILE #1 W/ PARITY -- 1-BLOCK PARITY GROUP -- EXTENT = 1
8192 BYTES TOTAL / UTILIZATION = 100%

3243

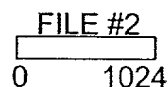
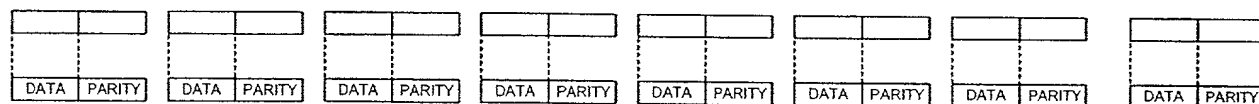
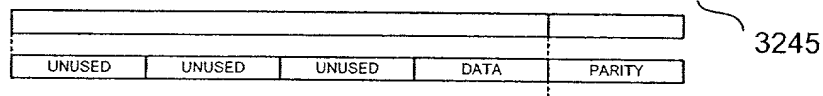


FIGURE 32B

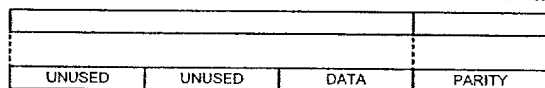
FILE #2 W/ PARITY -- 4-BLOCK PARITY GROUP -- EXTENT = 2
5120 BYTES TOTAL / UTILIZATION = 25%

3250



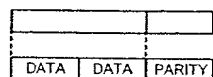
FILE #2 W/ PARITY -- 3-BLOCK PARITY GROUP -- EXTENT = 2
4096 BYTES TOTAL / UTILIZATION = 33%

3251



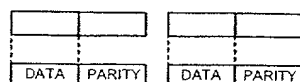
FILE #2 W/ PARITY -- 2-BLOCK PARITY GROUP -- EXTENT = 1
1536 BYTES TOTAL / UTILIZATION = 100%

3252



FILE #2 W/ PARITY -- 1-BLOCK PARITY GROUP -- EXTENT = 1
2048 BYTES TOTAL / UTILIZATION = 100%

3253



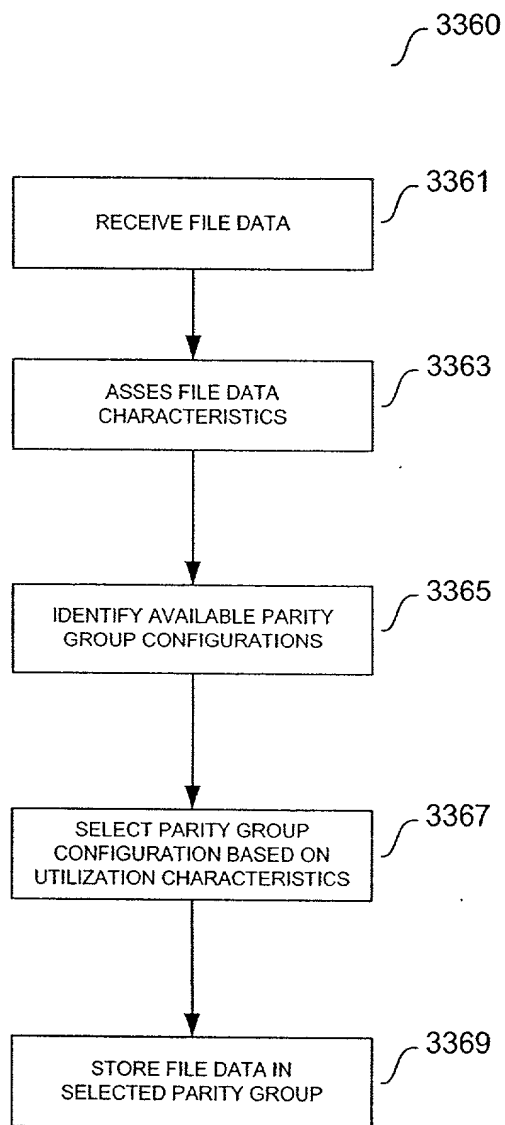


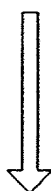
FIGURE 33

[illegible]

THE
NEW
YORK
PUBLIC
LIBRARY



THE
NEW
YORK
PUBLIC
LIBRARY

[illegible][illegible]

THE
NEW
YORK
PUBLIC
LIBRARY

PARITY GROUP REDISTRIBUTION PROCESSES

3510

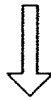
FIGURE 35A

PARITY GROUP DISSOLUTION

5-BLOCK PARITY GROUP

3515

DATA	DATA	DATA	DATA	DATA	PARITY
------	------	------	------	------	--------



1-BLOCK PARITY GROUP

3520

DATA	PARITY
------	--------

3-BLOCK PARITY GROUP

3525

DATA	DATA	DATA	PARITY
------	------	------	--------

OR

2-BLOCK PARITY GROUP

3530

DATA	DATA	PARITY
------	------	--------

2-BLOCK PARITY GROUP

3530

DATA	DATA	PARITY
------	------	--------

OR

1-BLOCK PARITY GROUP

3520

DATA	PARITY
------	--------

1-BLOCK PARITY GROUP

3520

DATA	PARITY
------	--------

1-BLOCK PARITY GROUP

3520

DATA	PARITY
------	--------

FIGURE 35B

PARITY GROUP CONSOLIDATION

3535

2-BLOCK PARITY GROUPS

3530

DATA	DATA	PARITY
------	------	--------

DATA	DATA	PARITY
------	------	--------



3-BLOCK PARITY GROUP

3525

DATA	DATA	DATA	PARITY
------	------	------	--------

1-BLOCK PARITY GROUP

3520

DATA	PARITY
------	--------

OR

5-BLOCK PARITY GROUP

3515

DATA	DATA	DATA	DATA	DATA	PARITY
------	------	------	------	------	--------

2025 RELEASE UNDER E.O. 14176

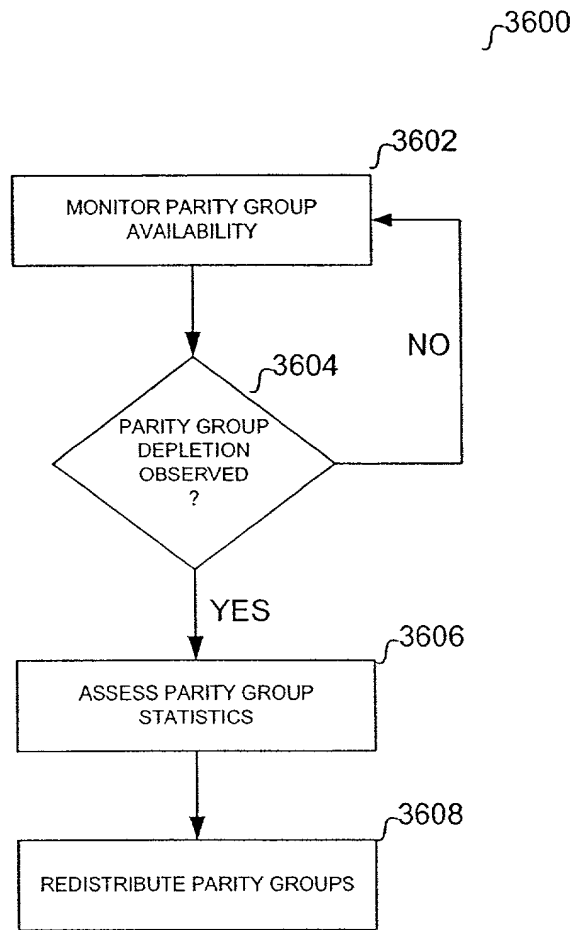


FIGURE 36

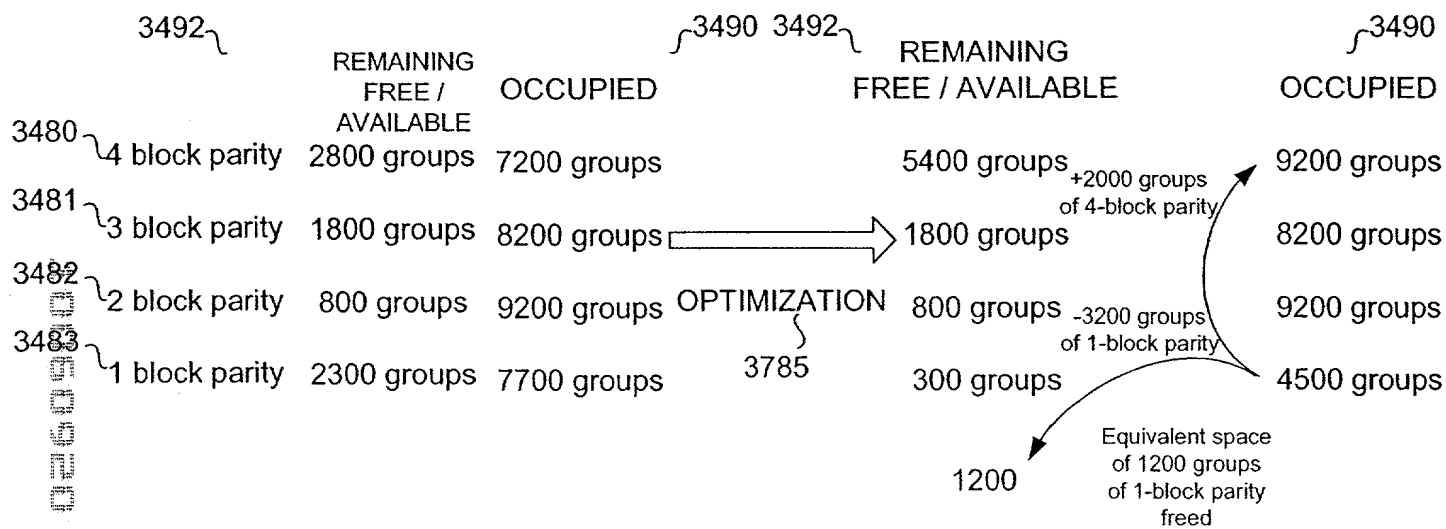


FIGURE 37

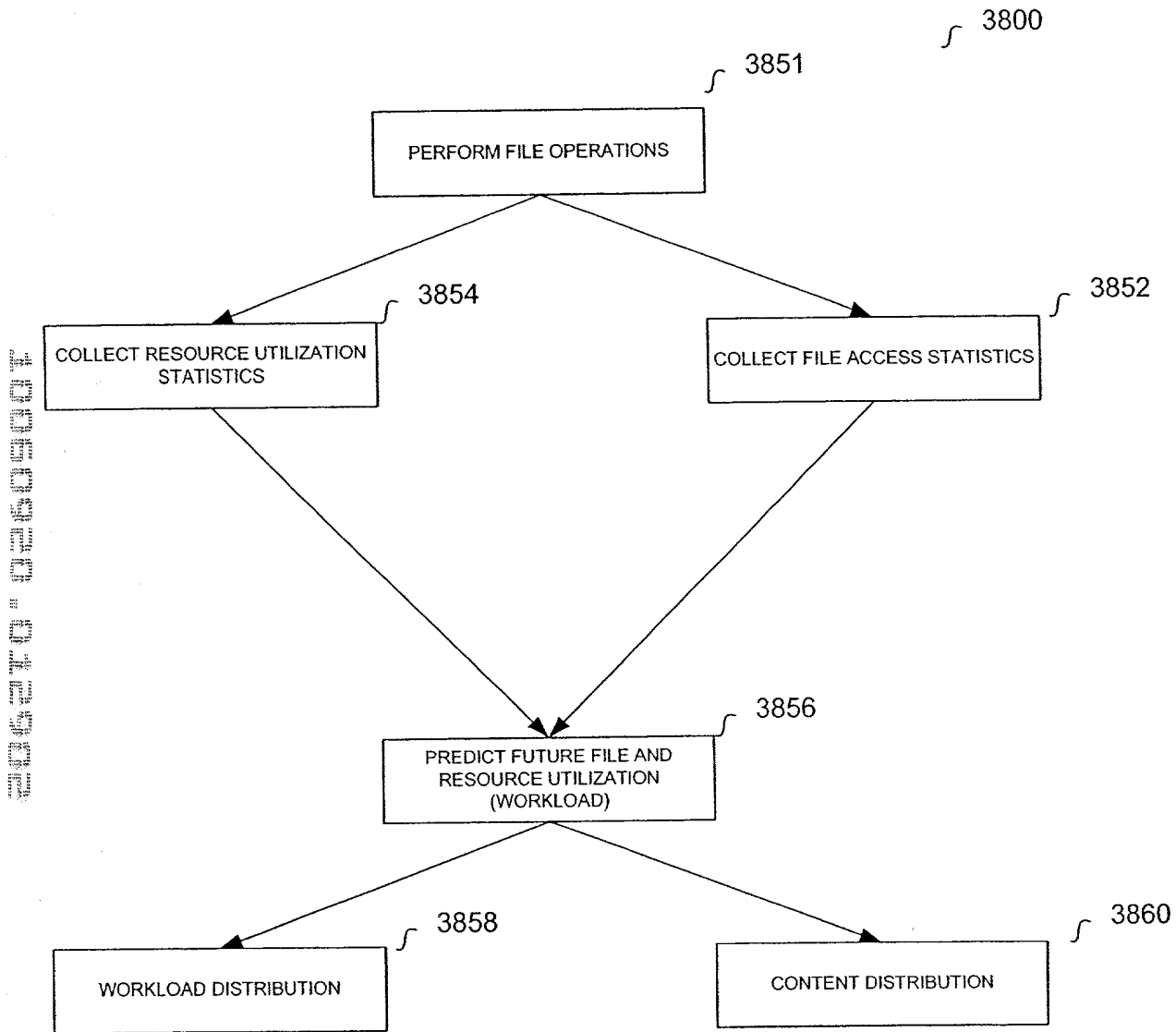


FIGURE 38

3900

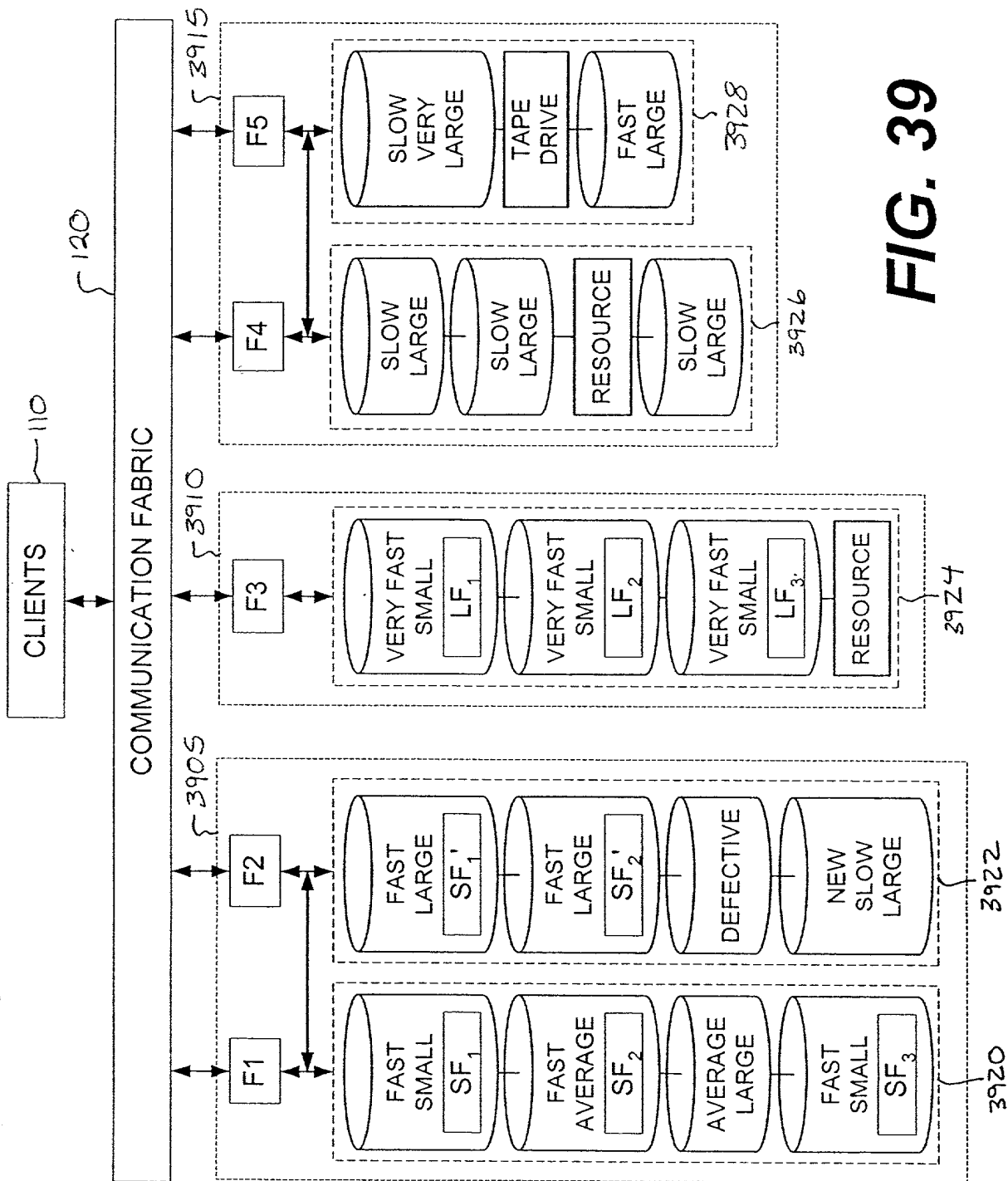


FIG. 39

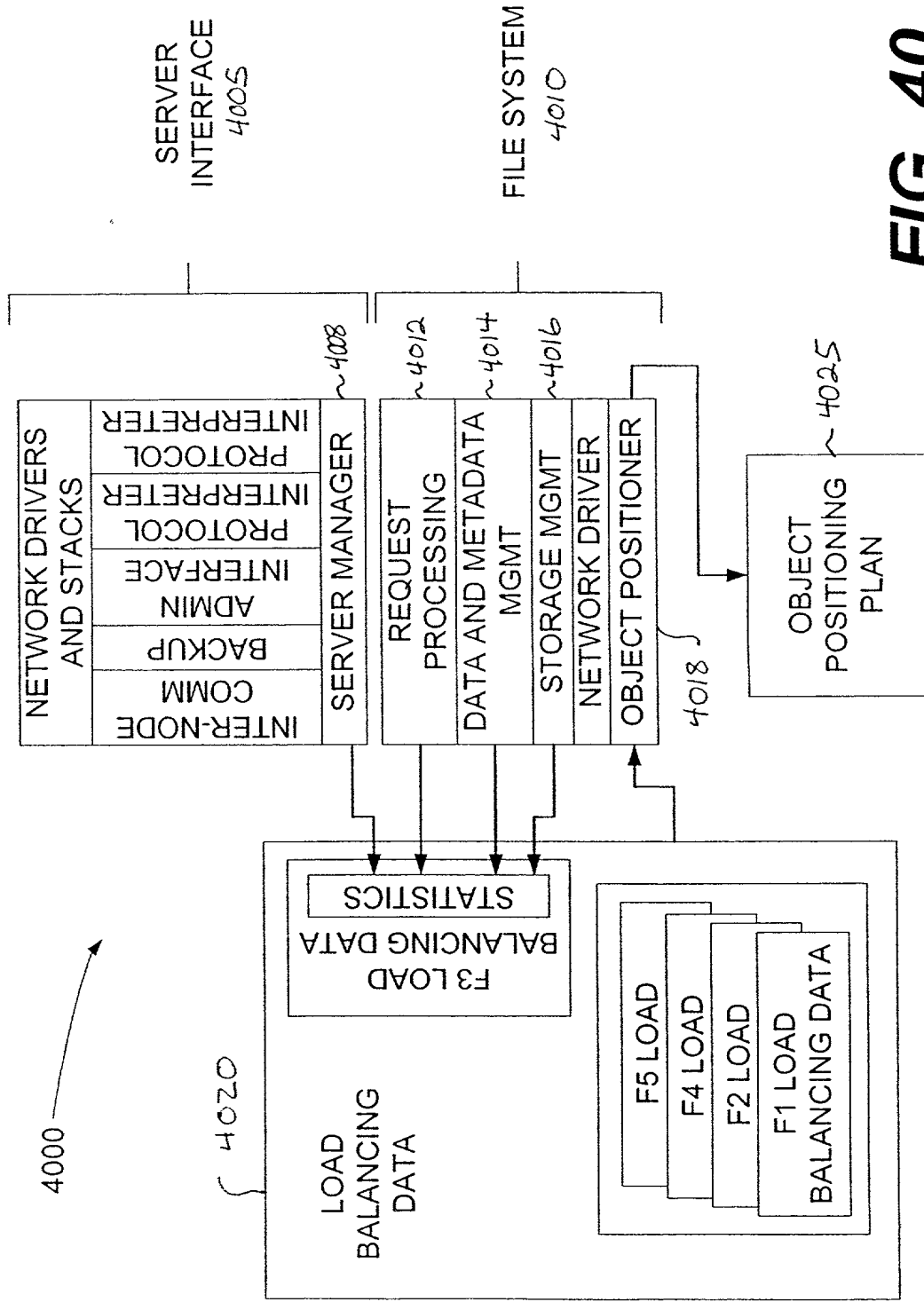


FIG. 40

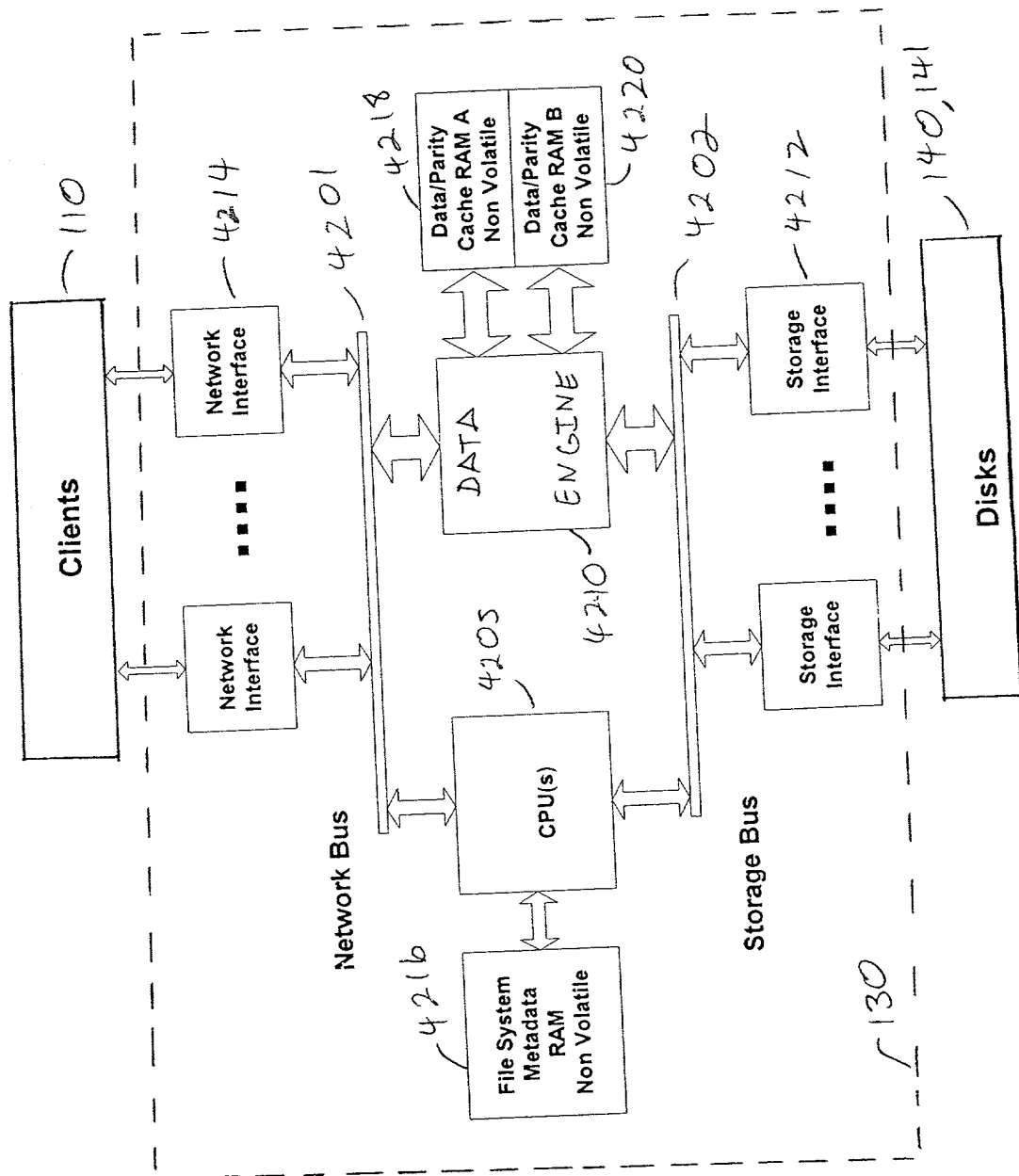


FIGURE 42

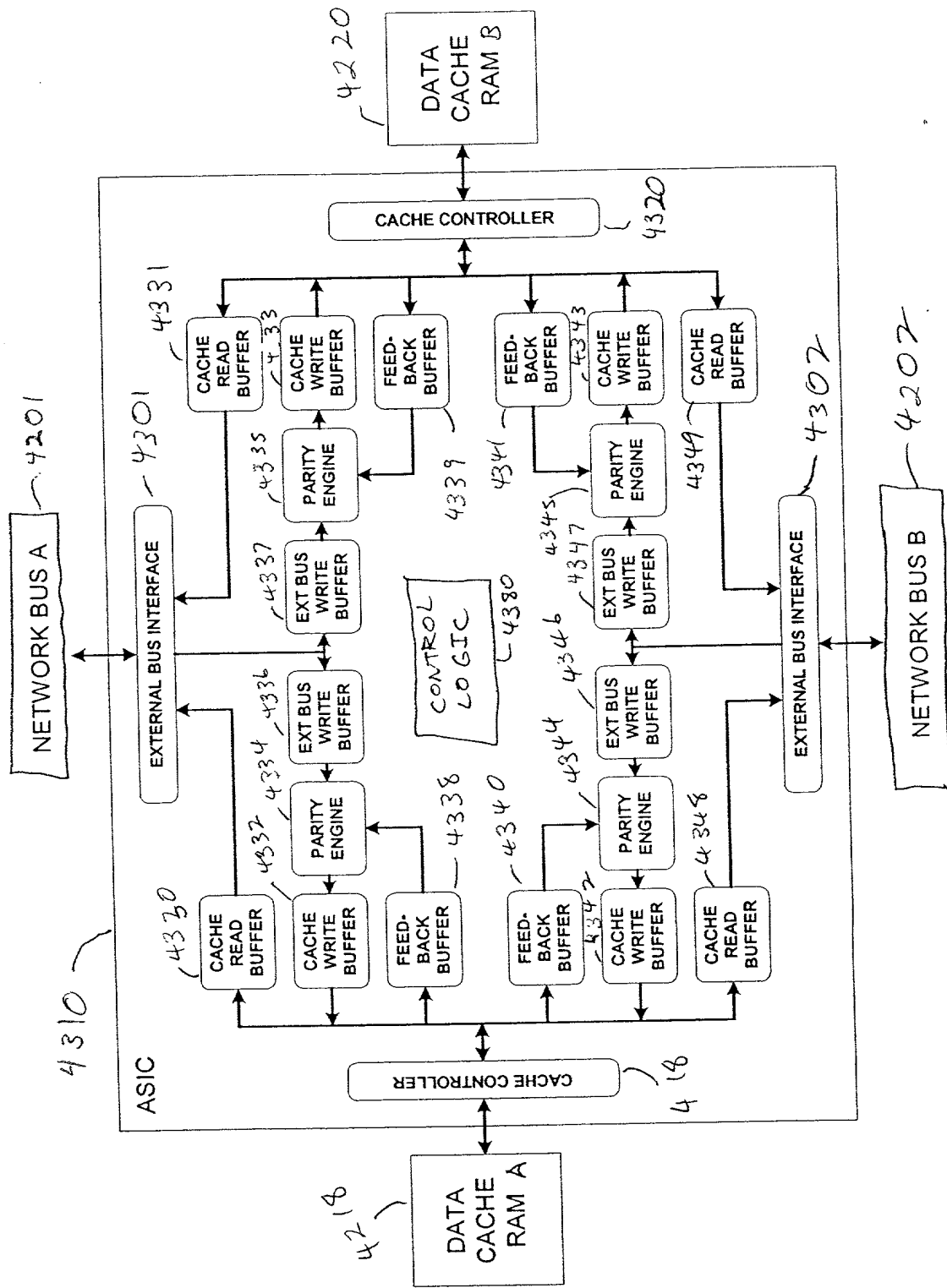


FIGURE 43

PCI map	Block Size	Opcode	Spare	Parity Index	Spare	RAM Addr
63-----62, 61-----59, 58-----56, 55-----51, 50-----35, 34, 32, 31-----						-----0

↑
4400
FIGURE 44